BatteryDAQ™
Monitoring Solutions
"It's Nice to Know"

Battery Analyzer
Battery DAS
V3.2
Compatible with MyBattery Platform™

Battery Monitoring Software

User's Manual

think before you print
Only print the page you need

BatteryDAQ LLC

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Copyright

All rights reserved. NO part of this manual shall be stored in a retrieval system, or transmitted by any means without the written permission of BatteryDAQ.

Liability

Neither BatteryDAQ nor any of its employees shall be liable for any direct, indirect, incidental or consequential damages arising from the failure of the battery monitoring system due to the failure of a proprietary part of the battery monitoring system, even if BatteryDAQ had been advised in advance except for as provided by law.

Specification

BatteryDAQ makes every effort to ensure that the specifications and details in this manual are accurate and complete. BatteryDAQ reserves the right to alter or improve the specification, design or manufacturing process at any time, without notice.

Warranty

BatteryDAQ warrants this system free from defects in material and workmanship in operation for one year from the date of commissioning or sale by BatteryDAQ or its authorized dealer.

Limitation of Warranty

This warranty does not apply to defects arising from system modification performed without BatteryDAQ's written approval, or misuse of the system or any part of the system. The warranty excludes defects or malfunctions resulting from failure by the customer, or his designated personnel, to maintain and upkeep the batteries to which the system is fitted.

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1 Quick Guide

To test-drive Battery Analyzer software, please follow the steps here:

1) **DATABASE**
   Download Microsoft SQL Database express version from Microsoft website, select correct version for 32-bit or 64-bit
   http://www.microsoft.com/en-us/download/details.aspx?id=25052

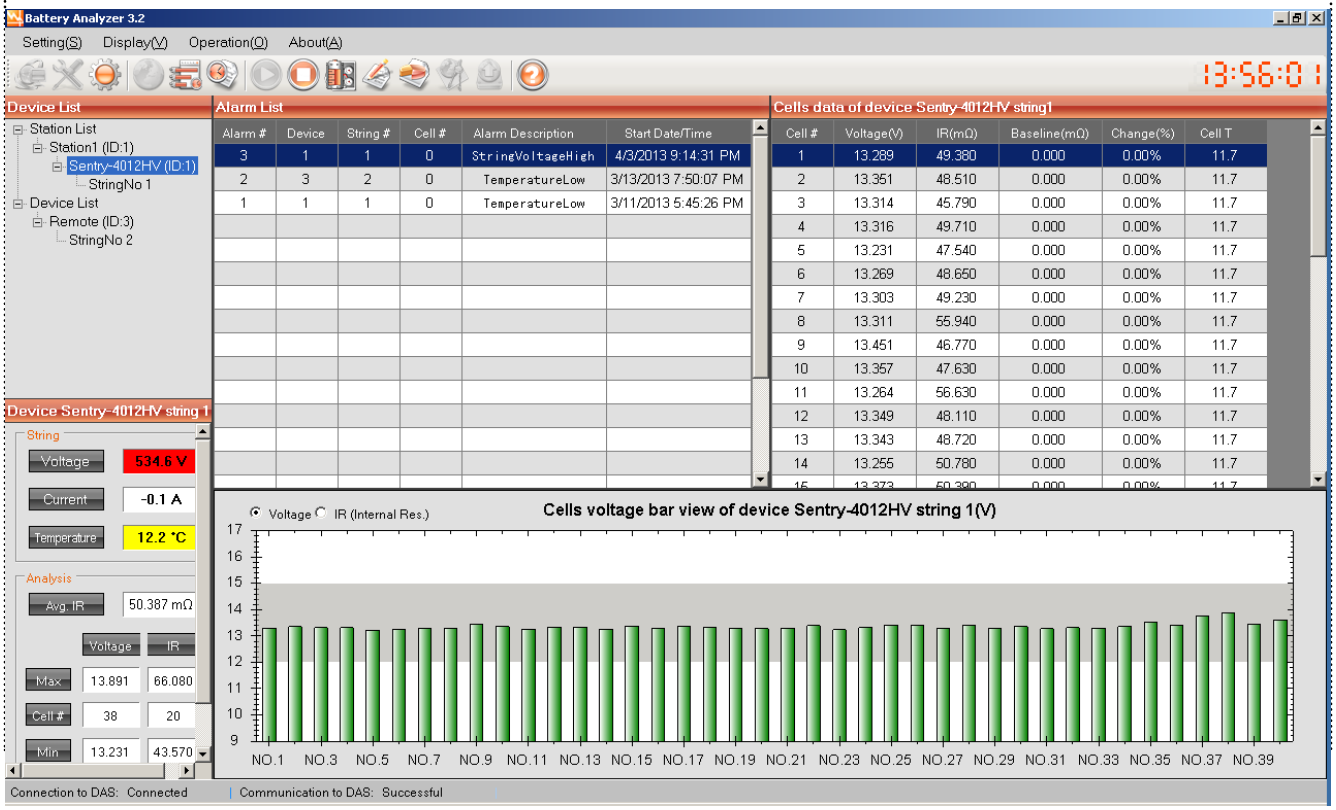
   32-bit: SQLEXPR32_x86_ENU.exe
   64-bit: SQLEXPR_x64_ENU.exe

   Follow the default settings for database installation.

2) BMS Software
   Download BatteryDAQ Battery Analyzer software.
   (Contact BatteryDAQ for secured download link.)

   Install Battery Analyzer with default settings.

3) Battery Data
   Click Battery Analyzer, with default settings, it connects to two battery strings in BatteryDAQ's lab. Realtime data will show on screen.


Battery Analyzer 3.2
Setting(S) Display(V) Operation(O) About(A)
Device List
Station List
Station1 (ID:1)
Sentry-4012HV (ID:1)
StringNo 1
Device List
Remote (ID:3)
StringNo 2
Alarm List
Alarm # Device String # Cell # Alarm Description Start Date/Time
3 1 1 0 StringVoltageHigh 4/3/2013 9:14:31 PM
2 3 2 0 TemperatureLow 3/13/2013 7:50:07 PM
1 1 1 0 TemperatureLow 3/11/2013 5:45:26 PM
Cells data of device Sentry-4012HV string1
Cell # Voltage(V) IR(mΩ) Baseline(mΩ) Change(%) Cell T
1 13.289 49.380 0.000 0.00% 11.7
2 13.351 48.510 0.000 0.00% 11.7
3 13.314 45.790 0.000 0.00% 11.7
4 13.316 49.710 0.000 0.00% 11.7
5 13.231 47.540 0.000 0.00% 11.7
6 13.269 48.650 0.000 0.00% 11.7
7 13.303 49.230 0.000 0.00% 11.7
8 13.311 55.940 0.000 0.00% 11.7
9 13.451 46.770 0.000 0.00% 11.7
10 13.357 47.630 0.000 0.00% 11.7
11 13.264 56.630 0.000 0.00% 11.7
12 13.349 48.110 0.000 0.00% 11.7
13 13.343 48.720 0.000 0.00% 11.7
14 13.255 50.780 0.000 0.00% 11.7
Device Sentry-4012HV string 1
String
Voltage 534.6 V
Current -0.1 A
Temperature 12.2 °C
Analysis
Avg. IR 50.387 mΩ
Voltage IR
Max 13.891 66.080
Cell # 38 20
Min 13.231 43.570
Voltage IR (Internal Res.)
Cells voltage bar view of device Sentry-4012HV string 1(V)
NO.1 NO.3 NO.5 NO.7 NO.9 NO.11 NO.13 NO.15 NO.17 NO.19 NO.21 NO.23 NO.25 NO.27 NO.29 NO.31 NO.33 NO.35 NO.37 NO.39
Connection to DAS: Connected
Communication to DAS: Successful

For upgrade from V3.0 or V3.1 to V3.2, uninstall old version, delete BMSClientInfo.config file before installation.

WinXP: C:\Documents and Settings*Yourname*\Application Data
Win7: C:\Users*Yourname*\AppData\Roaming

When the program is running and you try to uninstall it, it may have some issue which requires restarting PC to install the software.

*********For Windows XP**

1) Make sure Windows XP has SP2. If not, upgrade it.
2) Install Microsoft dotnetfx for NET framework **4.0** if you don't have.
3) Install Microsoft SQL Express if you don't have. Choose 32-bit or 64-bit to match your XP version.
4) Install BMS by click BMSSetup.msi, select both Battery Analyzer and DAS.
5) Configure DAS
6) Run Battery Analyzer, link to DAS for real-time data
7) Do a discharge record, in View -> History Query Panel, search for discharge record data. If there is a problem, you need to check database permission.

*********For Win 7 and 8***

1) Switch user to administrative user.
2) Install Microsoft SqlExpress if you don't have. Choose 32-bit or 64-bit to match your Win 7 version. No need to install NET framework for Win 7.
3) Install BMS by click BMSSetup.exe, select both Battery Analyzer and DAS.
4) Go to installation folder, right click run Battery Analyzer and Battery DAS as administrator, configurate Analyzer and DAS.
5) If click shortcut on desktop to run the program, no configuration can be changed.
6) Run Battery Analyzer, do a discharge record, in View->History Query Panel, search for record data to make sure database is working properly.
7) Run Battery Analyzer, link to DAS for real-time data

*********For Vista**

(BatteryDAQ no longer provides support to Vista.)

*********Got Problem***

Technical support: tech@batterydaq.com
BatteryDAQ USA

2 Overview of Technologies

BatteryDAQ provides advanced technologies and products for a variety of battery applications. We advance our competitors on many aspects:

- **Measurement**
- **Data Analysis**
- **Communication and networking**
- **Operator Interface**
- **Informatics**

Battery Analyzer v3.2 and DAS are the powerful monitoring software based on BatteryDAQ's experience and focus. It provides users critical information about their batteries by data, tables and charts. The real-time string voltage, current, temperature and the cell voltage and Internal Resistance will be collected and stored in database. The trend of battery condition can be easily visualized and analyzed.

Based on Microsoft .Net Framework, the software has powerful connectivity to network and database. It runs on both Windows XP and Windows 7, 32-bit or 64-bit.

Client (Battery Analyzer) and server (DAS) communicate through standard Modbus TCP protocol. One server can provide battery data for multiple clients. It is easy to integrate to the enterprise central management informatics platform and building security system.

Features

- Real-time data display, store, analysis and report generation
- Easy to locate battery with position, number and date/time
- Trend charts for voltage and internal resistance
- Display of bus voltage, current, cell voltage, cell internal resistance, connection resistance, pilot battery or ambient temperature
- Record the discharge event, lasting time and draw discharge curve for each battery
- Receive and display the alarm setting and events
- Compatible with MyBattery Platform™, a cloud based battery data access and management platform.

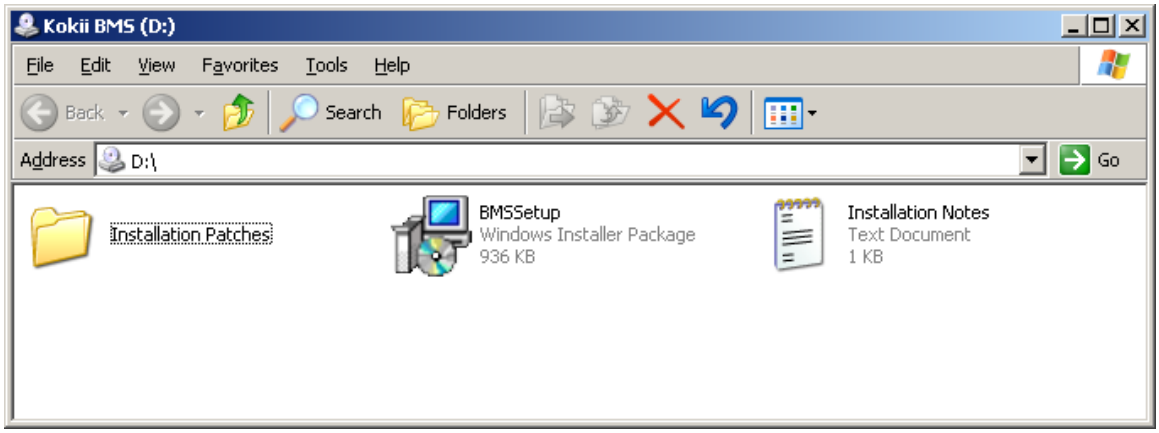
3 Software Installation

BMS software has 3 major components:

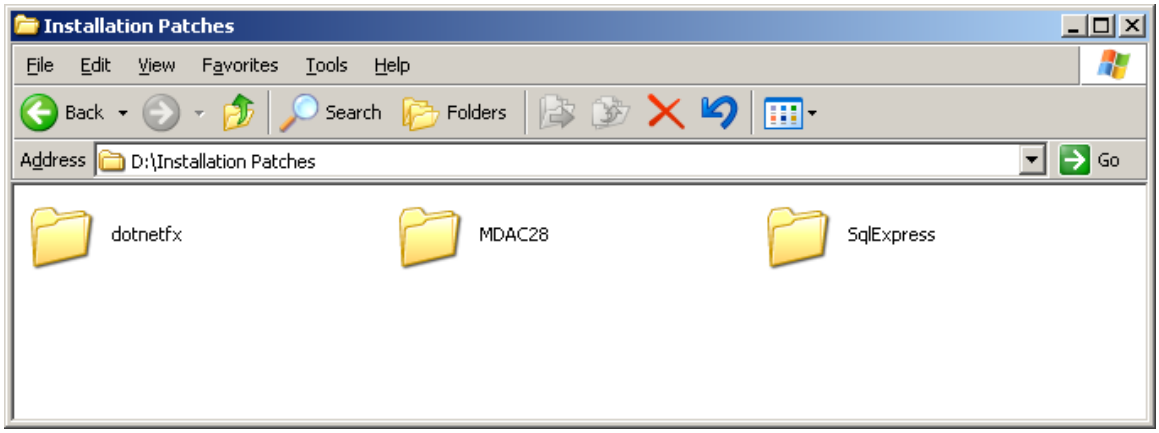
1) DAS - data acquisition. This module links physical devices through various communication methods including serial ports and TCP/IP connections.
2) Database – for standard user, the free Microsoft SqlExpress is the optimize option. For large scale application, it is user's responsibility to purchase the license for Microsoft Sql Server standard version.
3) Battery Analyzer – it retreat data from database and provides powerful user interface and management functions.

Analyzer can be installed on other PC alone which has Sql Server installed locally.

The software is based on NET framework. It works on Windows XP (with service pack 2) and Windows 7 systems. If the environment needs update, user can download components from Microsoft website or use the patches in the installation CD.



Contents in the patch folder:



Depending on PC software environment, only the necessary components need to be installed.

3.1 Pre-installation

Major steps:

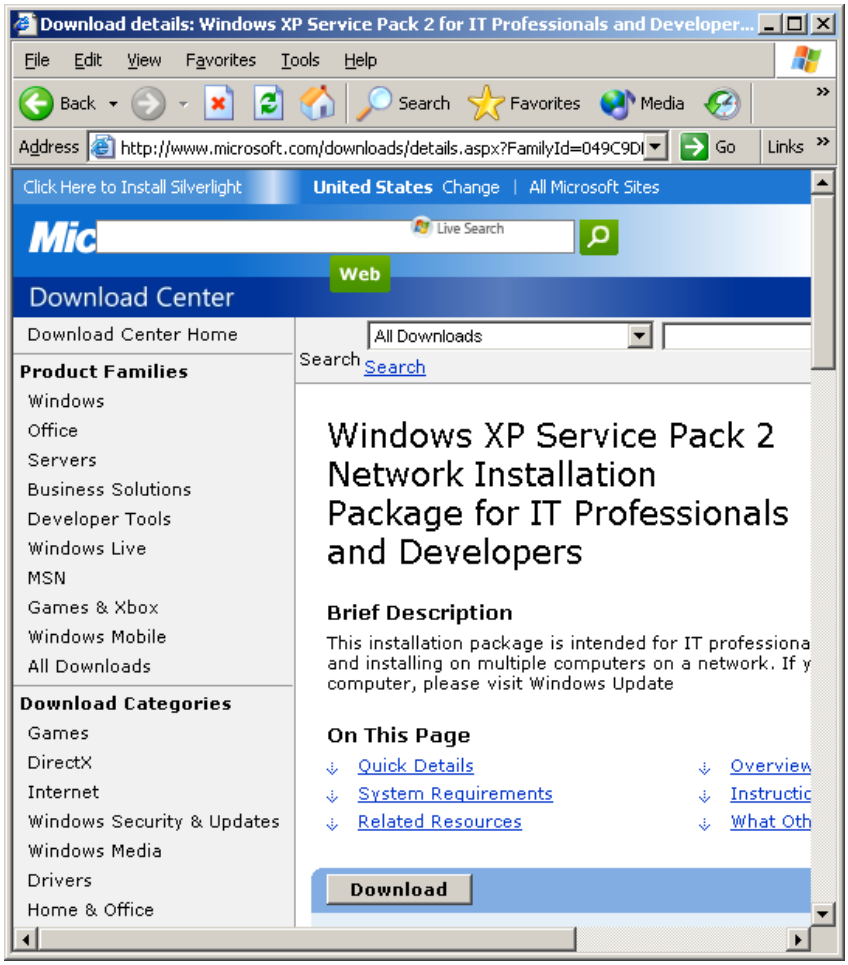
1. Verify computer has Microsoft Windows XP and Service Pack 2 or above. If not, install the service pack 2. Control Panel → System

2. Verify computer has Microsoft .NET framework 4.0 or later version. If not, install it.

3. Verify computer has Microsoft SQL Express database installed. If not, install it.

3.1.1 Update Service Pack2

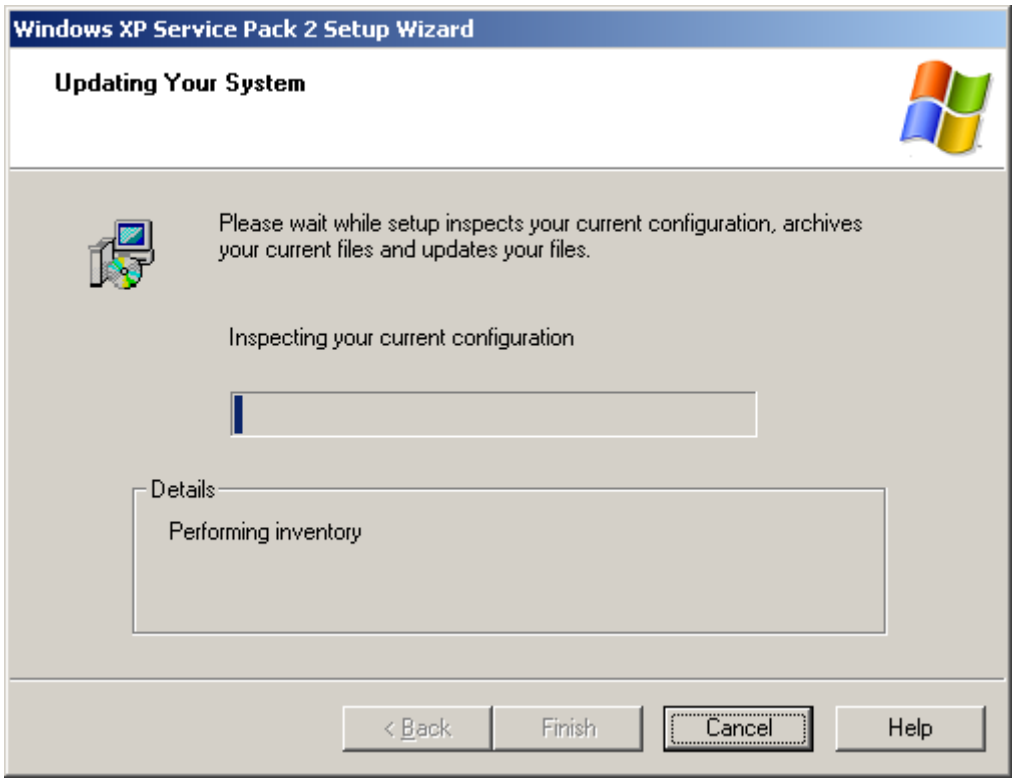
Go to Control Panel → System to check the operation system. If it needs update, go to the link as below:
http://www.microsoft.com/downloads/details.aspx?FamilyId=049C9DBE-3B8E-4F30-8245-9E368D3CDB5A&displaylang=en



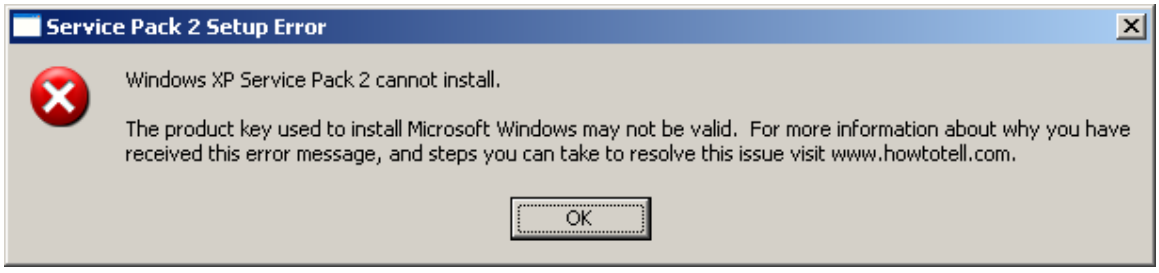
Click Download and install it.

SP2 is a big piece, after download, it will extract files to a temp folder.

The inspection will take few minutes depends on the computer speed.

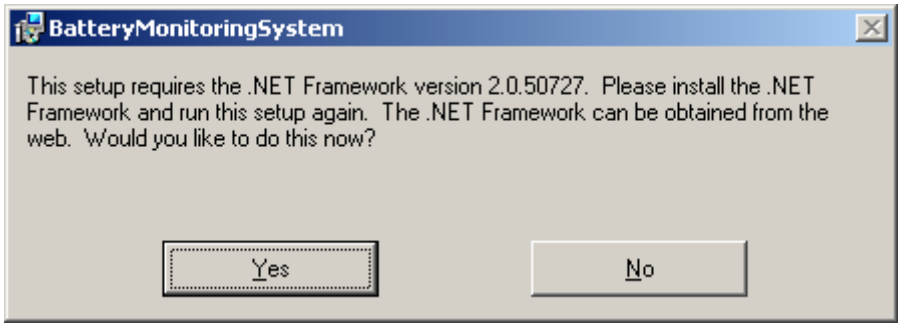


This step will take longer time. Be patient.
If you encounter this type of error, you may have to switch to another computer or reinstall a valid Windows XP.

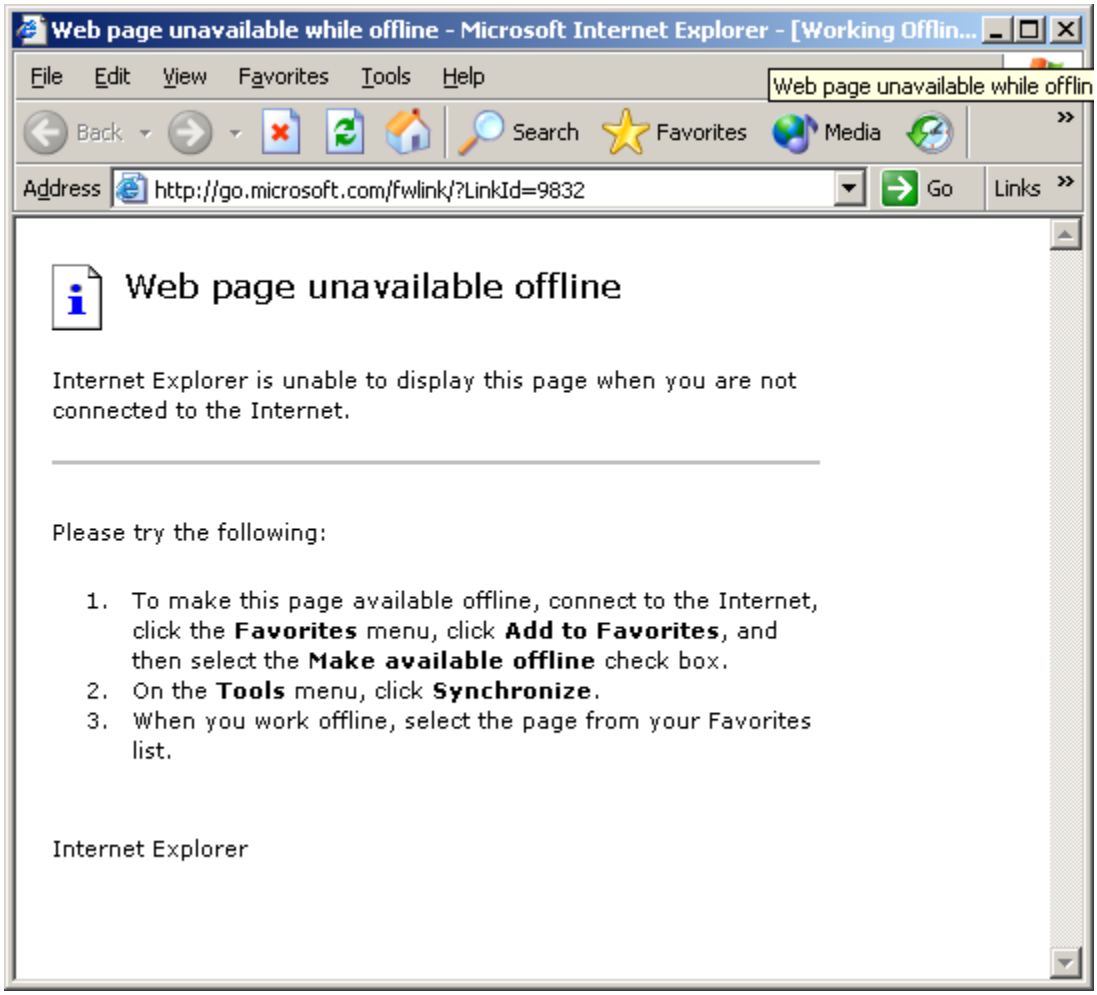

Service Pack 2 Setup Error
Windows XP Service Pack 2 cannot install.
The product key used to install Microsoft Windows may not be valid. For more information about why you have received this error message, and steps you can take to resolve this issue visit www.howtotell.com.
OK

3.1.2 Install .NET Framework 4.0

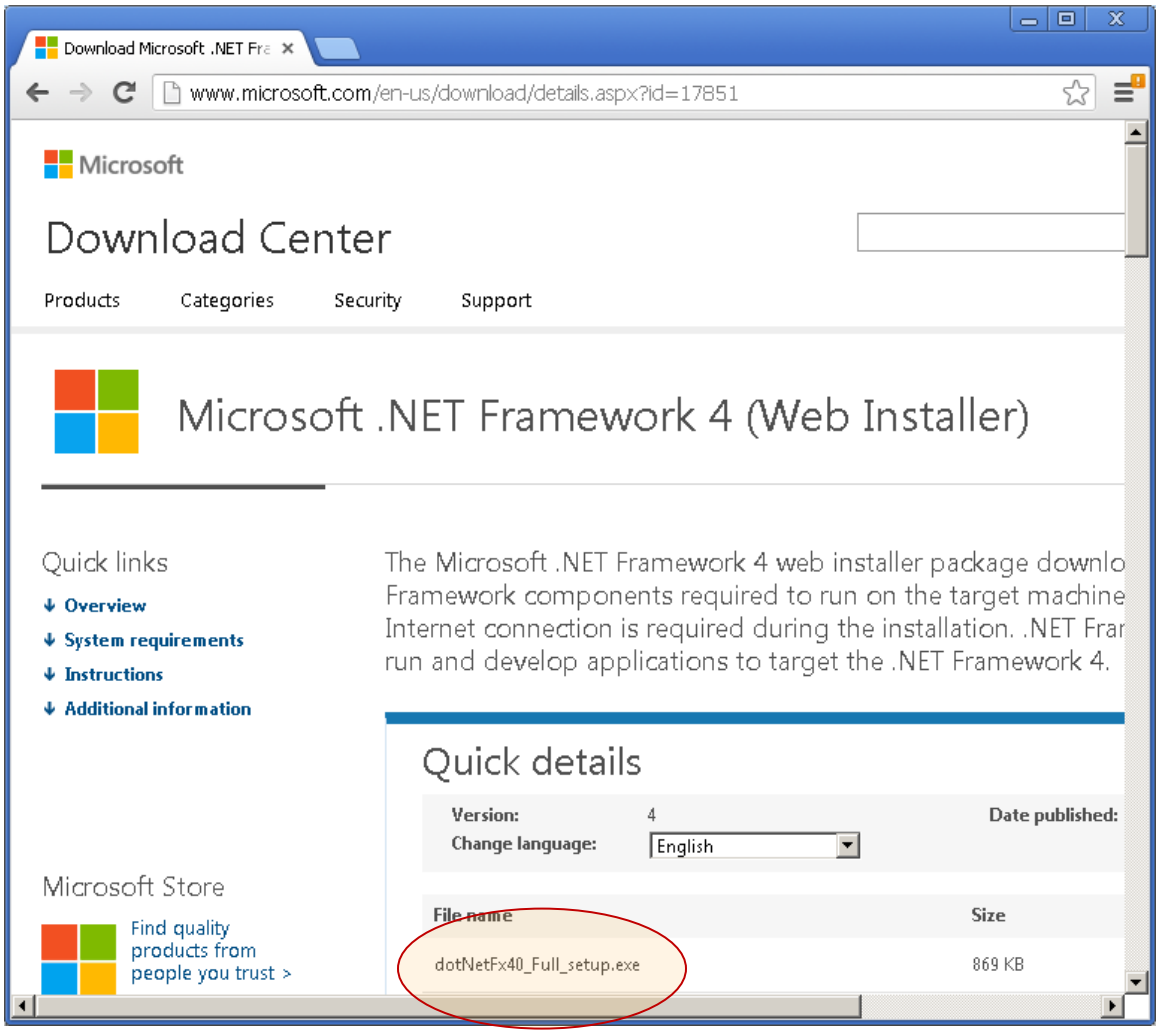
If your PC doesn't have .NET Framework installed, the message will guide you to Microsoft download.


BatteryMonitoringSystem
This setup requires the .NET Framework version 2.0.50727. Please install the .NET Framework and run this setup again. The .NET Framework can be obtained from the web. Would you like to do this now?
Yes
No

If the network is not connected, it will show the blank page.


Web page unavailable while offline - Microsoft Internet Explorer - [Working Offlin...
File Edit View Favorites Tools Help
Web page unavailable while offlin
Back Search Favorites Media
Address http://go.microsoft.com/fwlink/?LinkId=9832
Go Links
Web page unavailable offline
Internet Explorer is unable to display this page when you are not connected to the Internet.
Please try the following:
1. To make this page available offline, connect to the Internet, click the Favorites menu, click Add to Favorites, and then select the Make available offline check box.
2. On the Tools menu, click Synchronize.
3. When you work offline, select the page from your Favorites list.
Internet Explorer

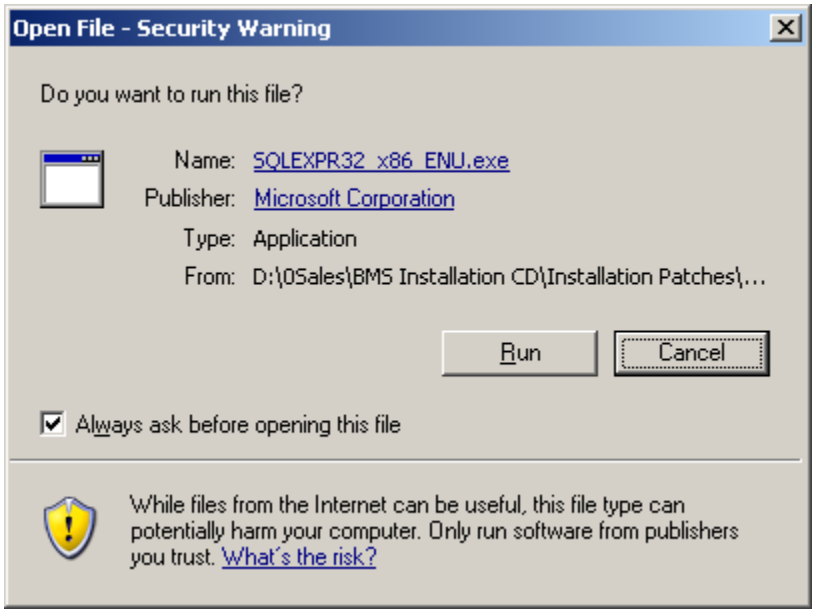
Or it will link to the download page in Microsoft website.

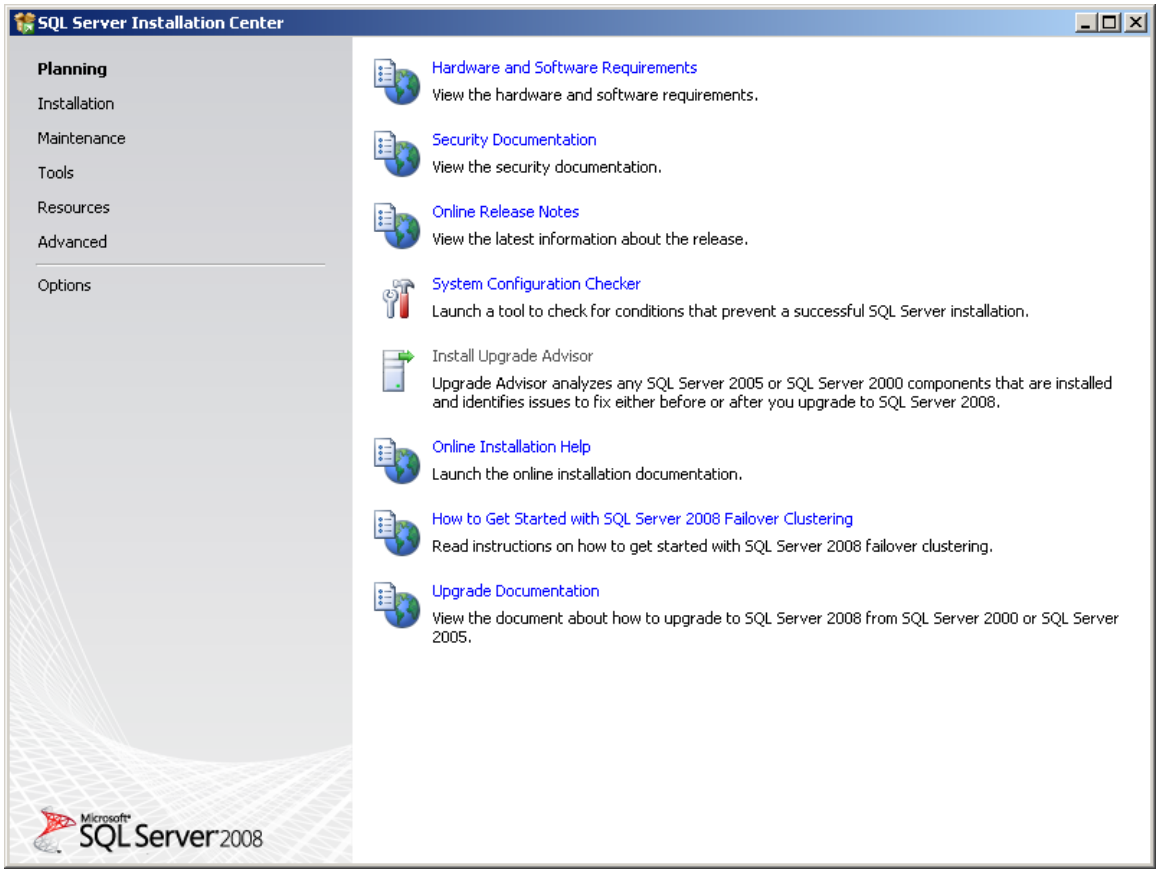


Download dotNetFx40_Full_Setup.exe and install it.

3.1.3 Install SqlExpress

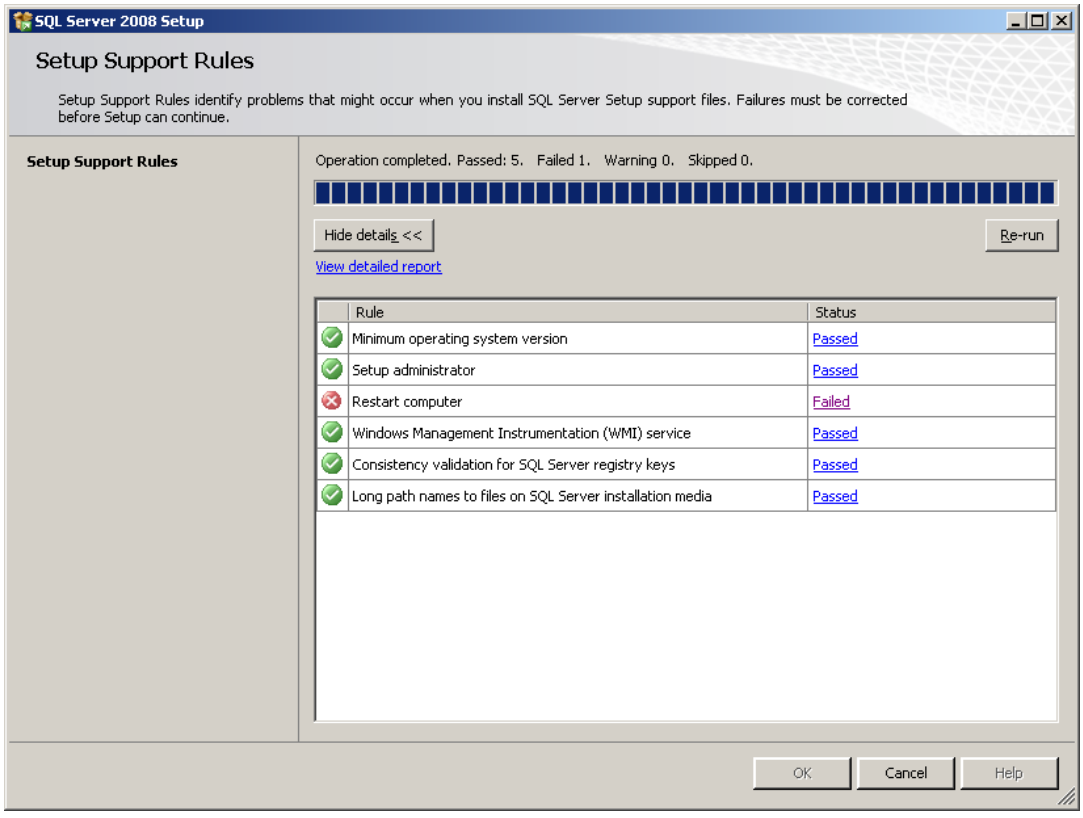
Install SQL 2008 Express


Open File - Security Warning
Do you want to run this file?
Name: SQLEXPR32_x86_ENU.exe
Publisher: Microsoft Corporation
Type: Application
From: D:\0Sales\BMS Installation CD\Installation Patches\...
Run
Cancel
Always ask before opening this file
While files from the Internet can be useful, this file type can potentially harm your computer. Only run software from publishers you trust. What's the risk?

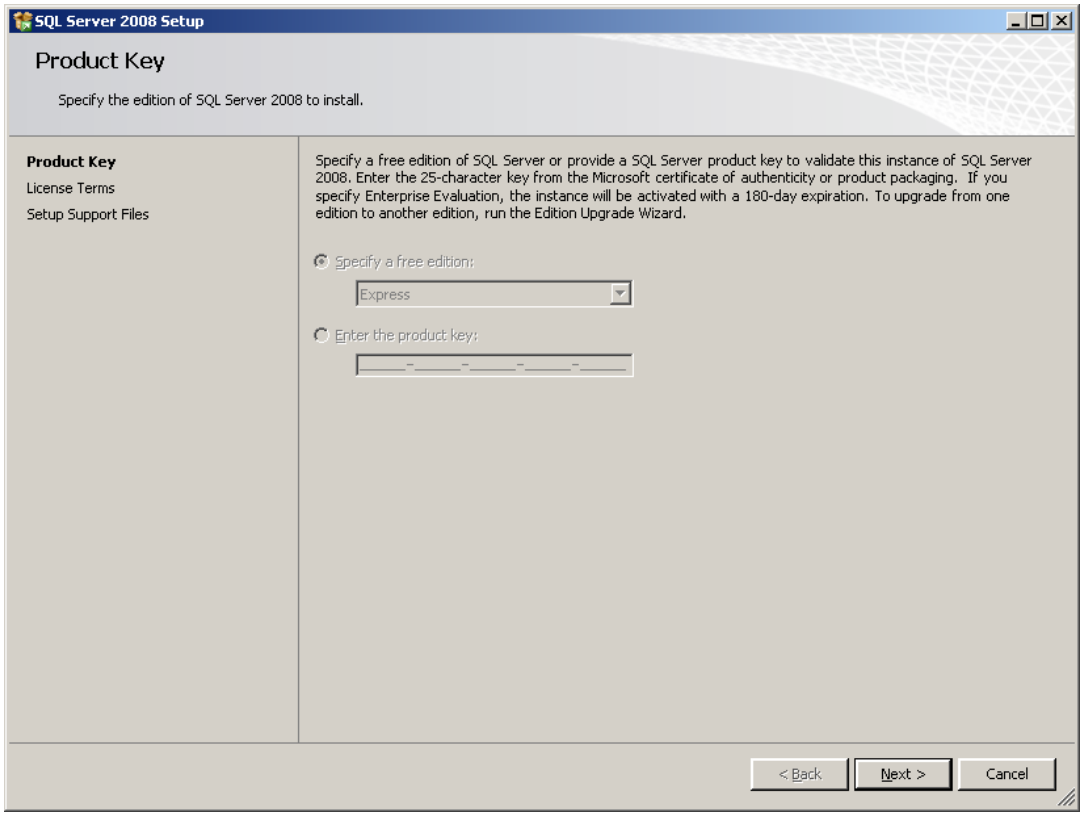

SQL Server Installation Center
Planning
Installation
Maintenance
Tools
Resources
Advanced
Options
Hardware and Software Requirements
View the hardware and software requirements.
Security Documentation
View the security documentation.
Online Release Notes
View the latest information about the release.
System Configuration Checker
Launch a tool to check for conditions that prevent a successful SQL Server installation.
Install Upgrade Advisor
Upgrade Advisor analyzes any SQL Server 2005 or SQL Server 2000 components that are installed and identifies issues to fix either before or after you upgrade to SQL Server 2008.
Online Installation Help
Launch the online installation documentation.
How to Get Started with SQL Server 2008 Failover Clustering
Read instructions on how to get started with SQL Server 2008 failover clustering.
Upgrade Documentation
View the document about how to upgrade to SQL Server 2008 from SQL Server 2000 or SQL Server 2005.
Microsoft SQL Server 2008

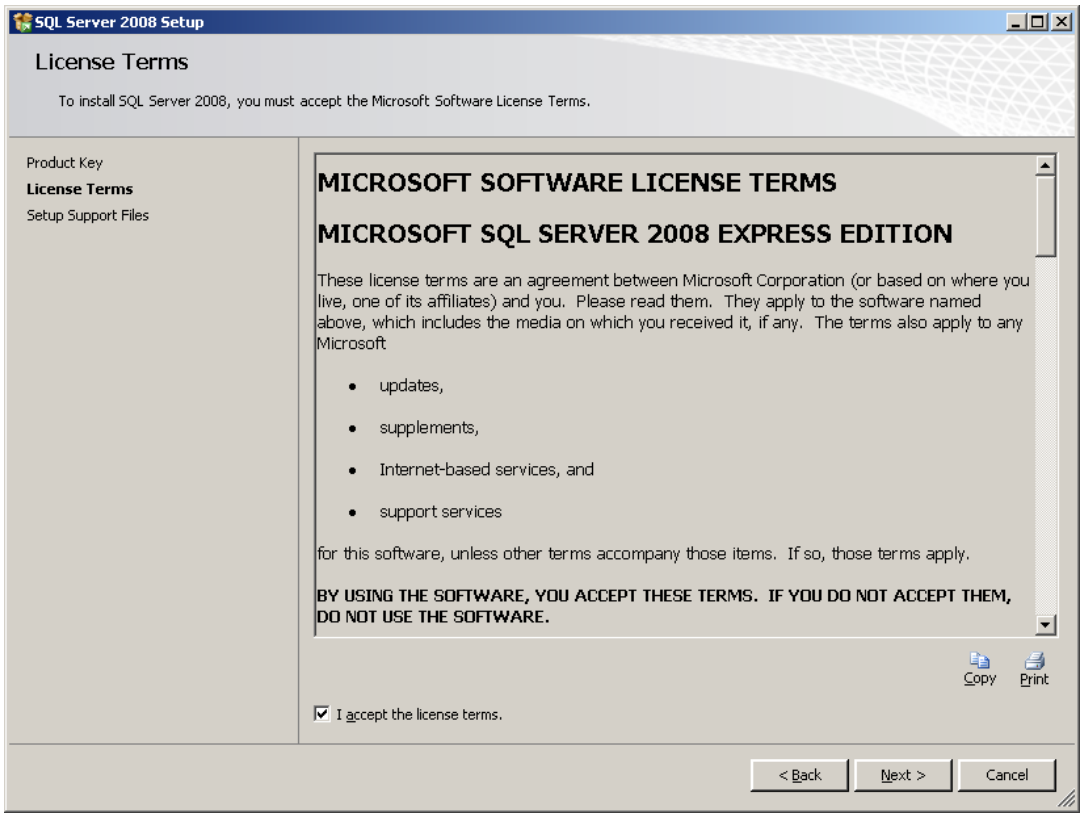
SQL Server Installation Center
Planning
Installation
Maintenance
Tools
Resources
Advanced
Options
New SQL Server stand-alone installation or add features to an existing installation
Launch a wizard to install SQL Server 2008 in a non-clustered environment or to add features to an existing SQL Server 2008 instance.
New SQL Server failover cluster installation
Launch a wizard to install a single-node SQL Server 2008 failover cluster.
Add node to a SQL Server failover cluster
Launch a wizard to add a node to an existing SQL Server 2008 failover cluster.
Upgrade from SQL Server 2000 or SQL Server 2005
Launch a wizard to upgrade SQL Server 2000 or SQL Server 2005 to SQL Server 2008. Before you upgrade, you should run the Upgrade Advisor to detect potential problems.
Search for product updates
Search Microsoft Update for SQL Server 2008 product updates.
Microsoft SQL Server 2008

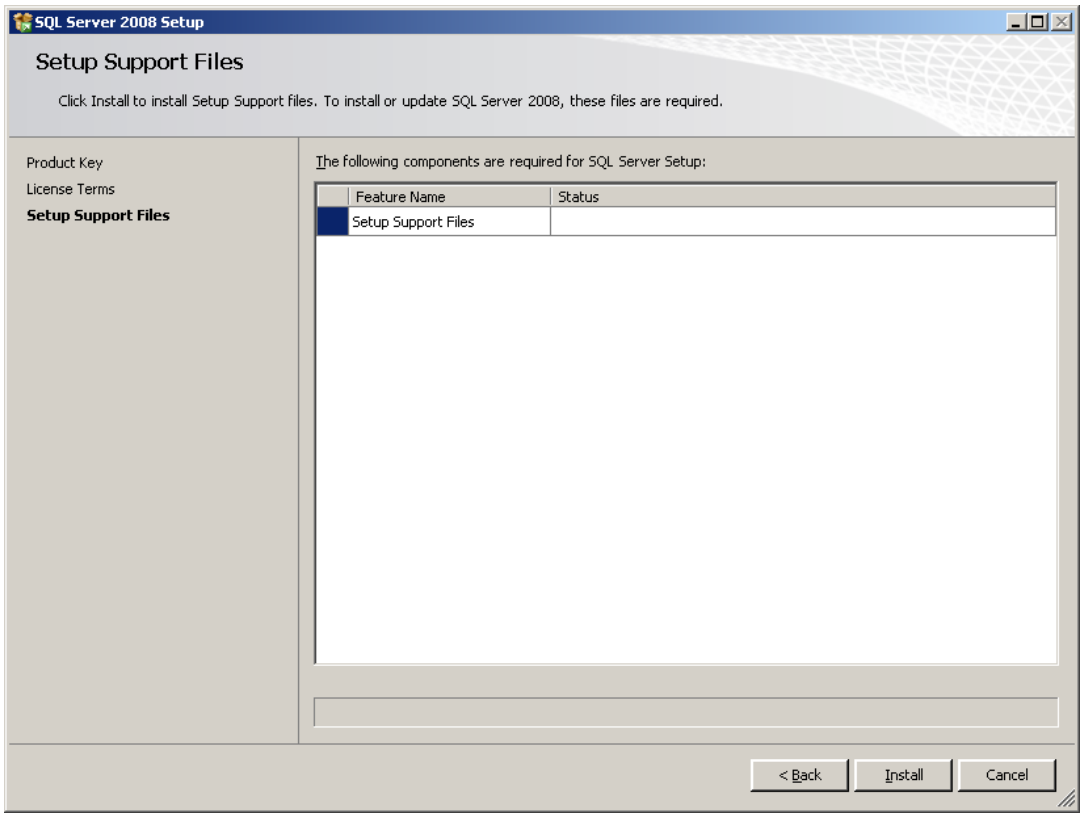
Select "New SQL Server stand-alone installation or add features to an existing installation".

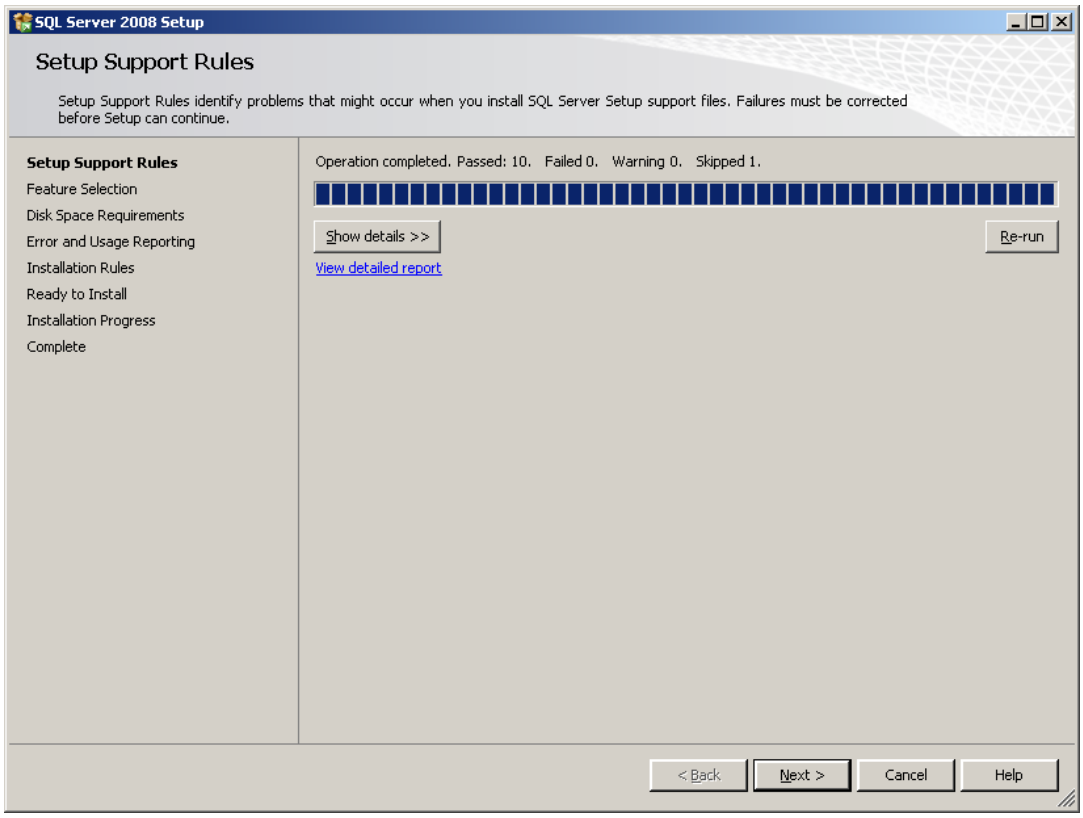


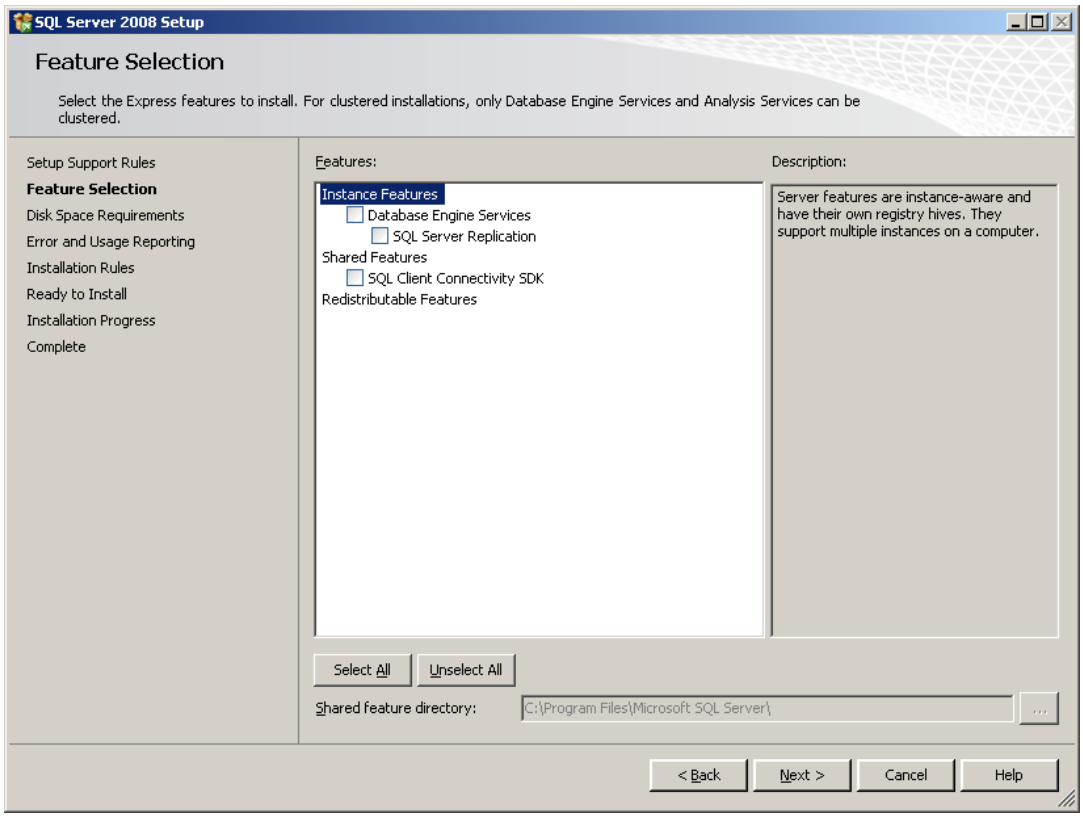
In case you encounter the error “restart computer”, open Regedit, and modify this key"HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager" and delete any value in "PendingFileRenameOperations".

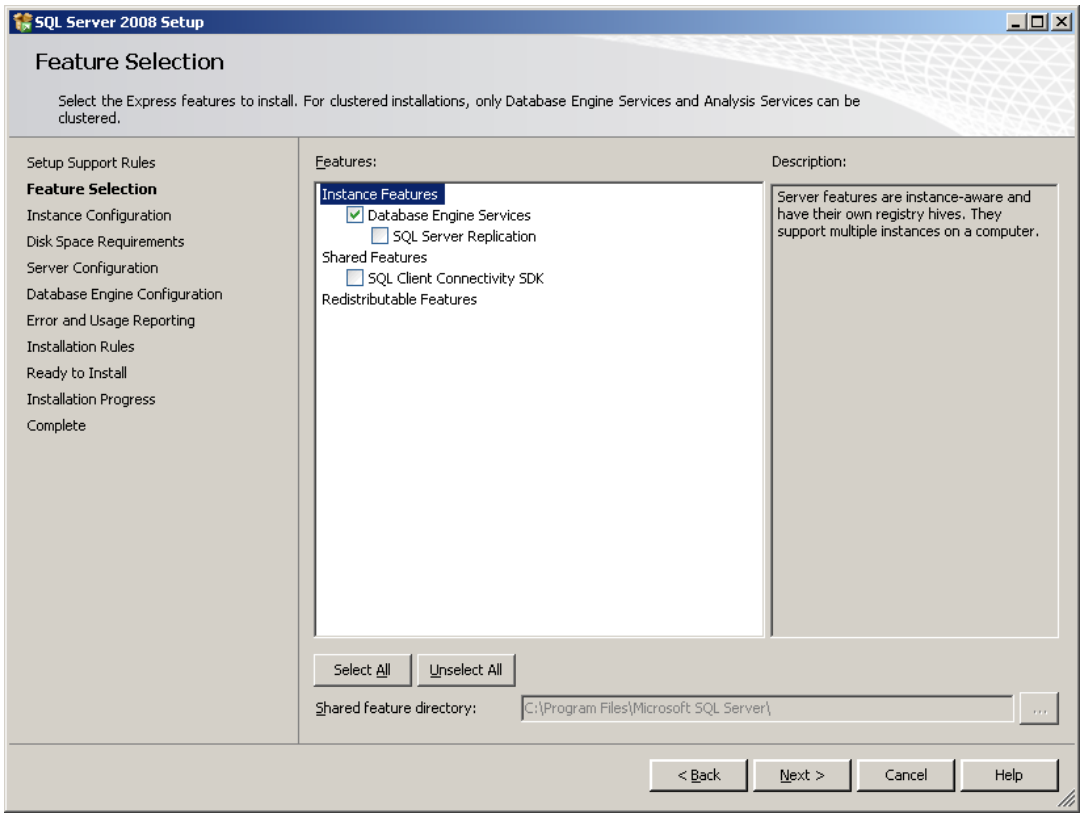

SQL Server 2008 Setup
Product Key
Specify the edition of SQL Server 2008 to install.
Product Key
License Terms
Setup Support Files
Specify a free edition of SQL Server or provide a SQL Server product key to validate this instance of SQL Server 2008. Enter the 25-character key from the Microsoft certificate of authenticity or product packaging. If you specify Enterprise Evaluation, the instance will be activated with a 180-day expiration. To upgrade from one edition to another edition, run the Edition Upgrade Wizard.
Specify a free edition:
Express
Enter the product key:
< Back
Next >
Cancel

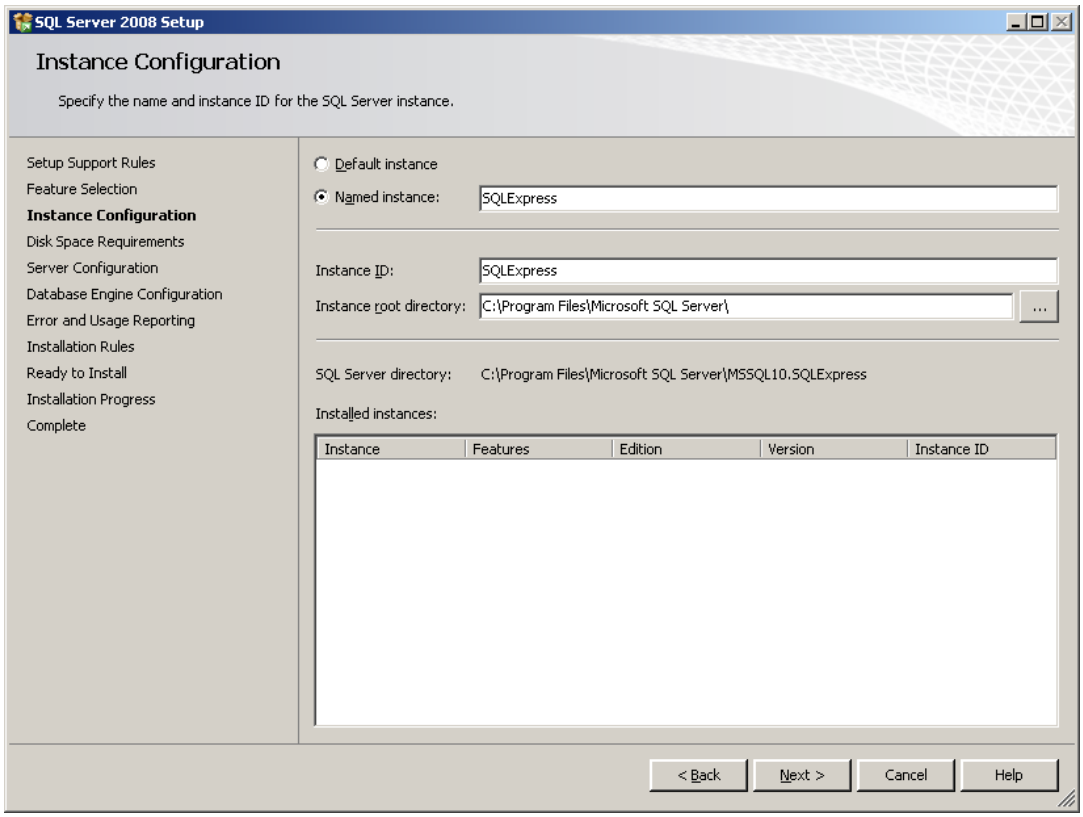

SQL Server 2008 Setup
License Terms
To install SQL Server 2008, you must accept the Microsoft Software License Terms.
Product Key
License Terms
Setup Support Files
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT SQL SERVER 2008 EXPRESS EDITION
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
for this software, unless other terms accompany those items. If so, those terms apply.
BY USING THE SOFTWARE, YOU ACCEPT THESE TERMS. IF YOU DO NOT ACCEPT THEM, DO NOT USE THE SOFTWARE.
Copy
Print
I accept the license terms.
< Back
Next >
Cancel

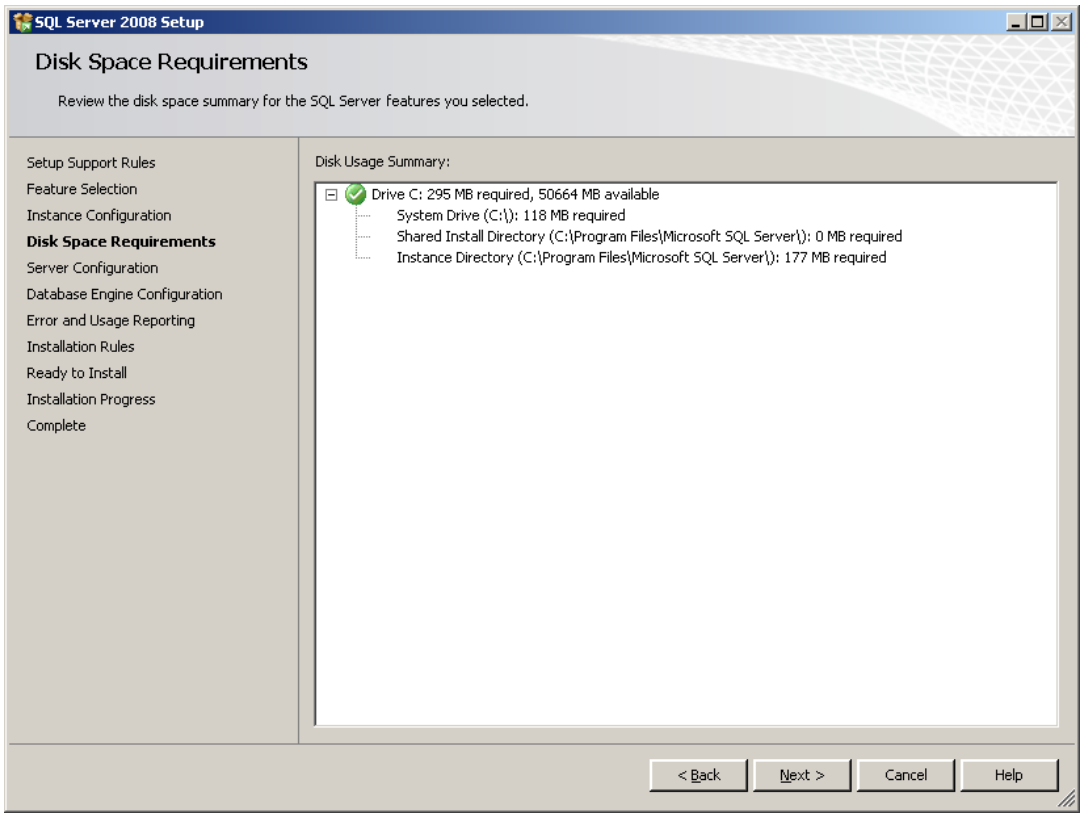

SQL Server 2008 Setup
Setup Support Files
Click Install to install Setup Support files. To install or update SQL Server 2008, these files are required.
Product Key
License Terms
Setup Support Files
The following components are required for SQL Server Setup:
Feature Name
Status
Setup Support Files
< Back
Install
Cancel

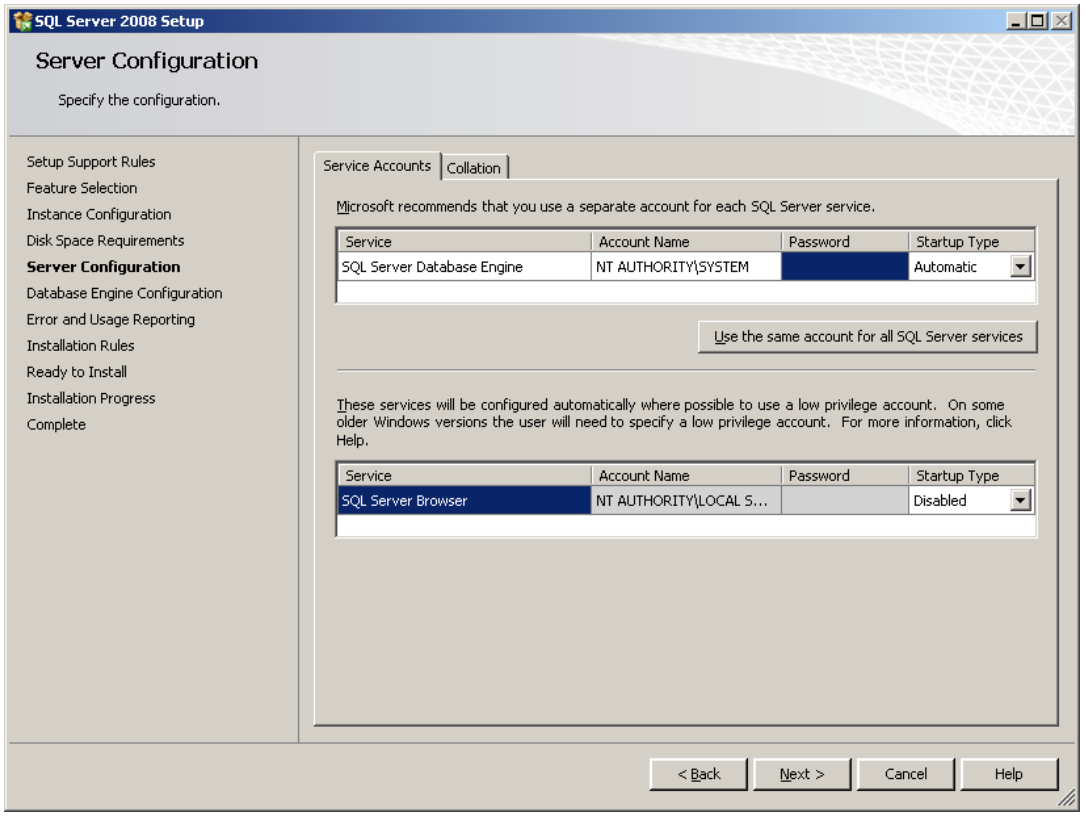

SQL Server 2008 Setup
Setup Support Rules
Setup Support Rules identify problems that might occur when you install SQL Server Setup support files. Failures must be corrected before Setup can continue.
Setup Support Rules
Feature Selection
Disk Space Requirements
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Operation completed. Passed: 10. Failed 0. Warning 0. Skipped 1.
Show details >>
Re-run
View detailed report
< Back
Next >
Cancel
Help

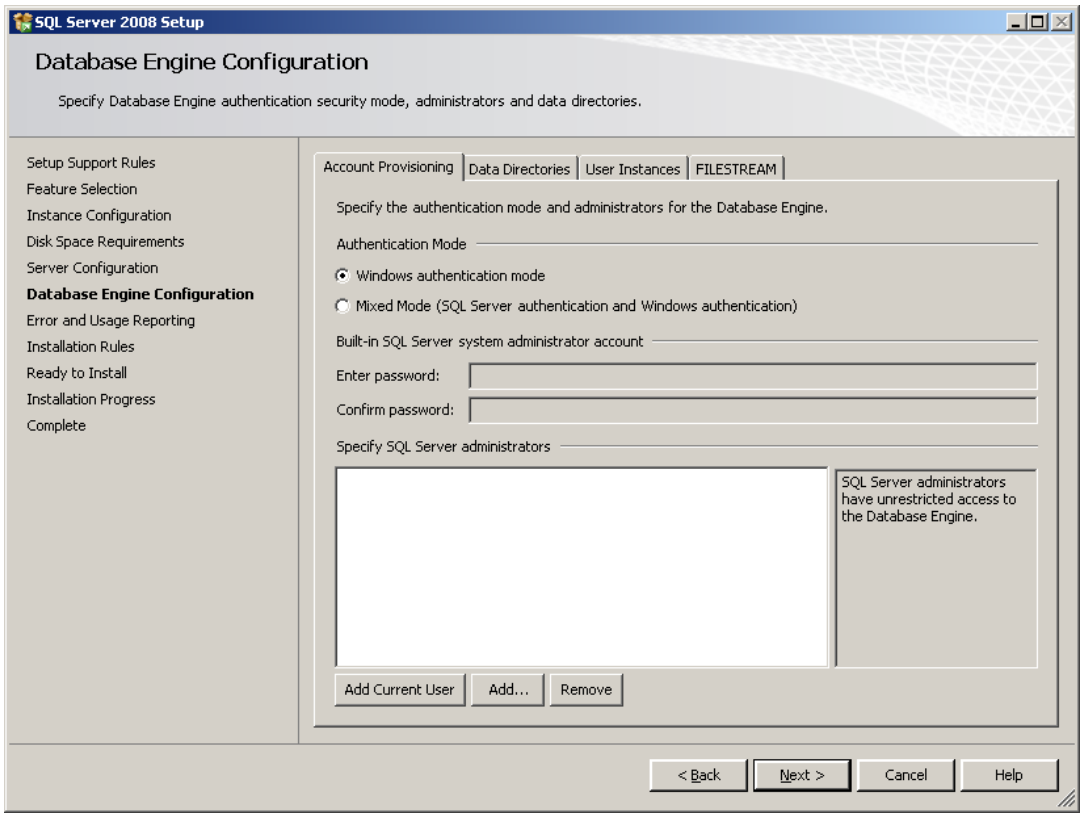

SQL Server 2008 Setup
Feature Selection
Select the Express features to install. For clustered installations, only Database Engine Services and Analysis Services can be clustered.
Setup Support Rules
Feature Selection
Disk Space Requirements
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Features:
Instance Features
Database Engine Services
SQL Server Replication
Shared Features
SQL Client Connectivity SDK
Redistributable Features
Description:
Server features are instance-aware and have their own registry hives. They support multiple instances on a computer.
Select All
Unselect All
Shared feature directory:
C:\Program Files\Microsoft SQL Server\
< Back
Next >
Cancel
Help


SQL Server 2008 Setup
Feature Selection
Select the Express features to install. For clustered installations, only Database Engine Services and Analysis Services can be clustered.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Features:
Instance Features
Database Engine Services
SQL Server Replication
Shared Features
SQL Client Connectivity SDK
Redistributable Features
Description:
Server features are instance-aware and have their own registry hives. They support multiple instances on a computer.
Select All
Unselect All
Shared feature directory:
C:\Program Files\Microsoft SQL Server\
< Back
Next >
Cancel
Help

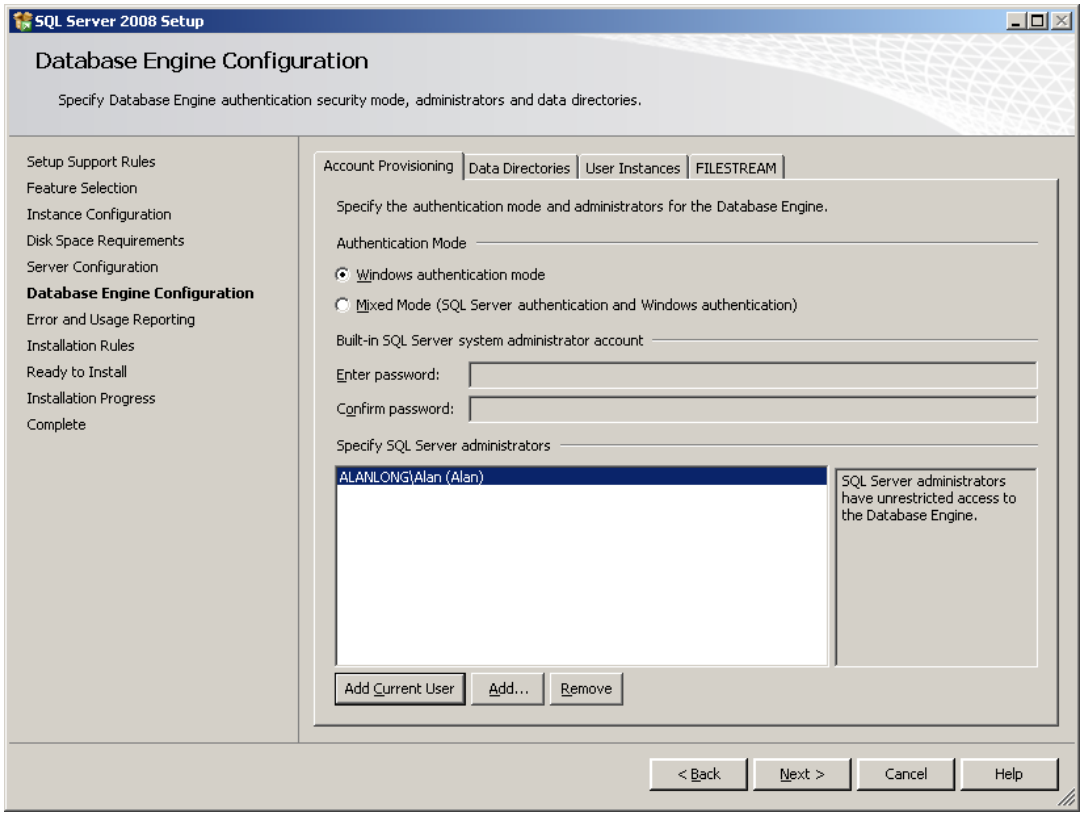

SQL Server 2008 Setup
Instance Configuration
Specify the name and instance ID for the SQL Server instance.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Default instance
Named instance:
SQLExpress
Instance ID:
SQLExpress
Instance root directory:
C:\Program Files\Microsoft SQL Server\
SQL Server directory:
C:\Program Files\Microsoft SQL Server\MSSQL10.SQLExpress
Installed instances:
Instance
Features
Edition
Version
Instance ID
< Back
Next >
Cancel
Help

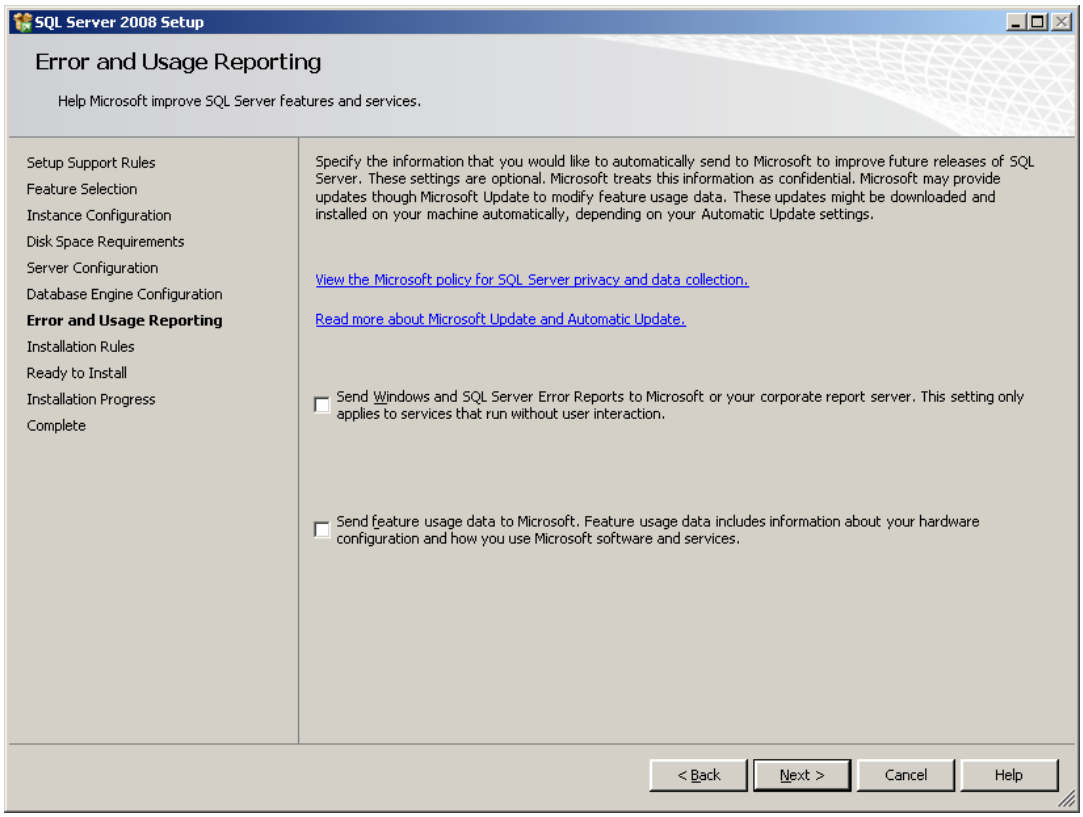

SQL Server 2008 Setup
Disk Space Requirements
Review the disk space summary for the SQL Server features you selected.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Disk Usage Summary:
Drive C: 295 MB required, 50664 MB available
System Drive (C:\): 118 MB required
Shared Install Directory (C:\Program Files\Microsoft SQL Server\): 0 MB required
Instance Directory (C:\Program Files\Microsoft SQL Server\): 177 MB required
< Back
Next >
Cancel
Help

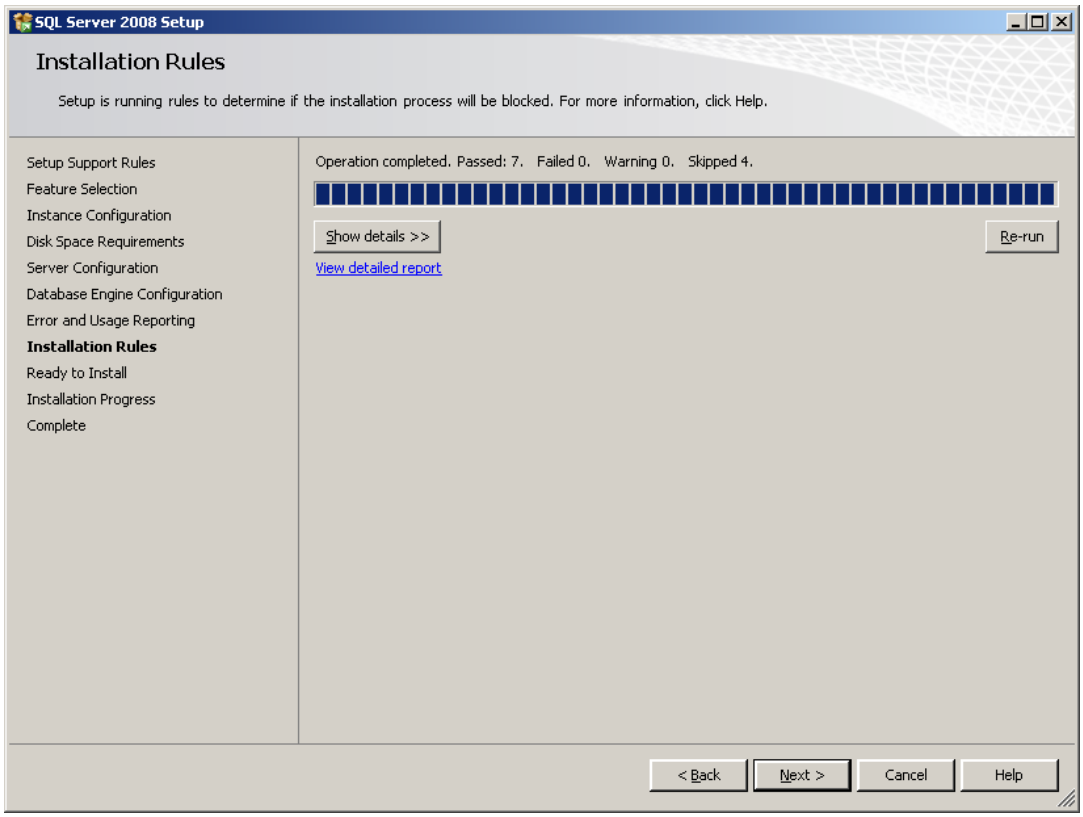

SQL Server 2008 Setup
Server Configuration
Specify the configuration.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Service Accounts
Collation
Microsoft recommends that you use a separate account for each SQL Server service.
Service
Account Name
Password
Startup Type
SQL Server Database Engine
NT AUTHORITY\SYSTEM
Automatic
Use the same account for all SQL Server services
These services will be configured automatically where possible to use a low privilege account. On some older Windows versions the user will need to specify a low privilege account. For more information, click Help.
Service
Account Name
Password
Startup Type
SQL Server Browser
NT AUTHORITY\LOCAL S...
Disabled
< Back
Next >
Cancel
Help

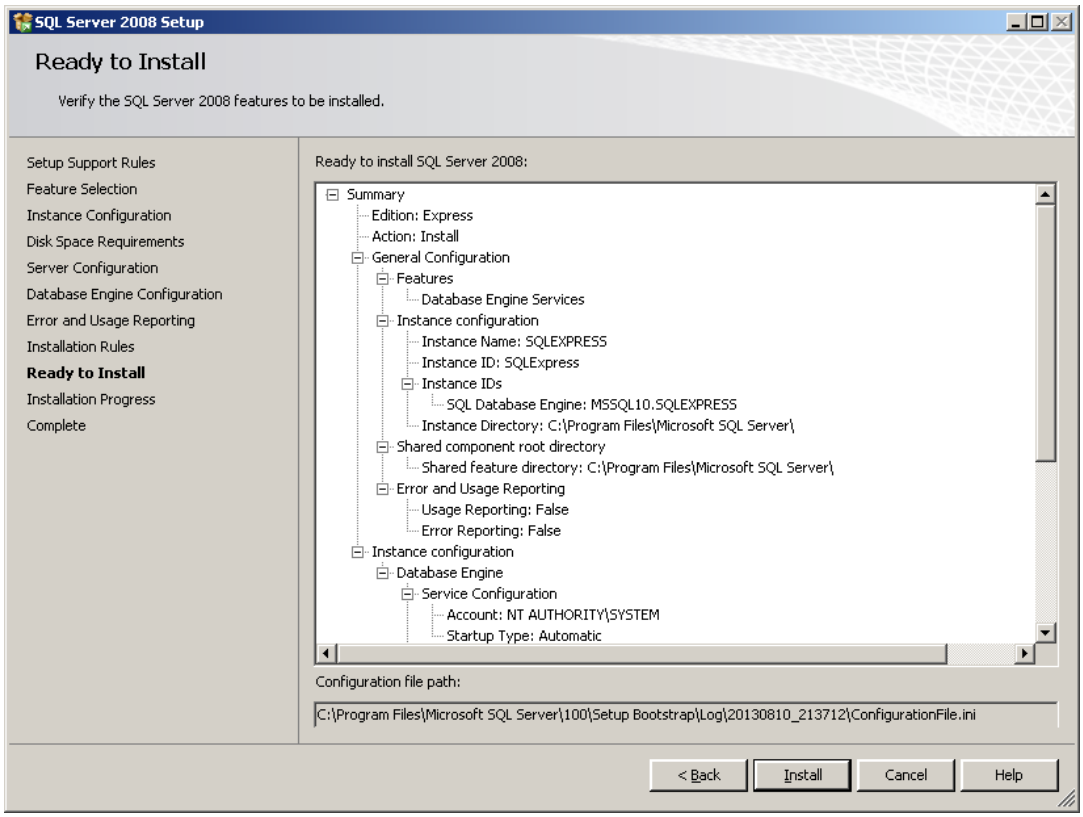


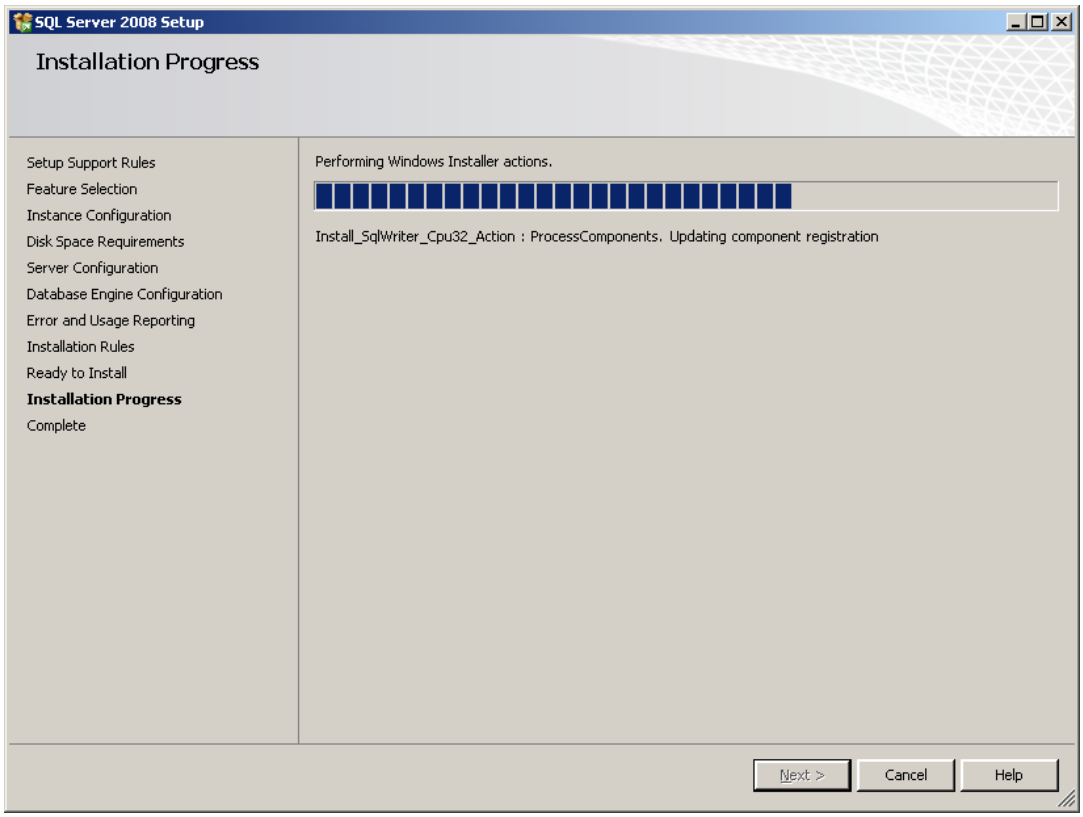
Click add current user.

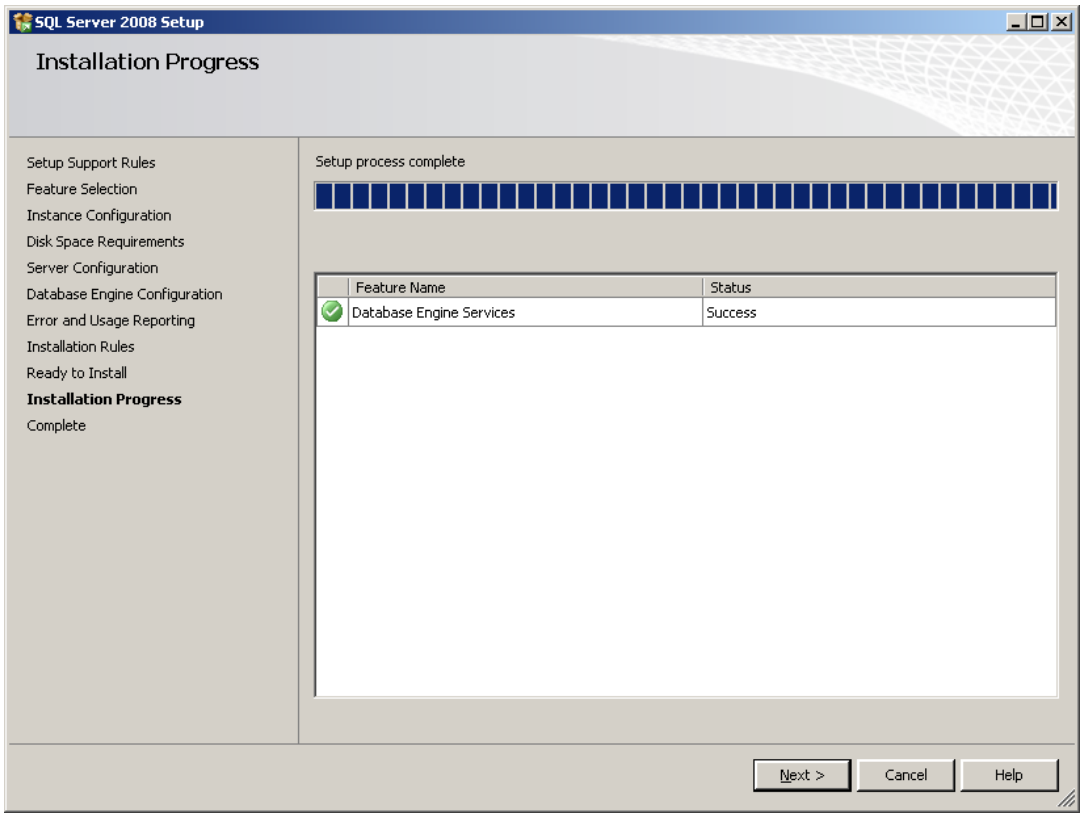


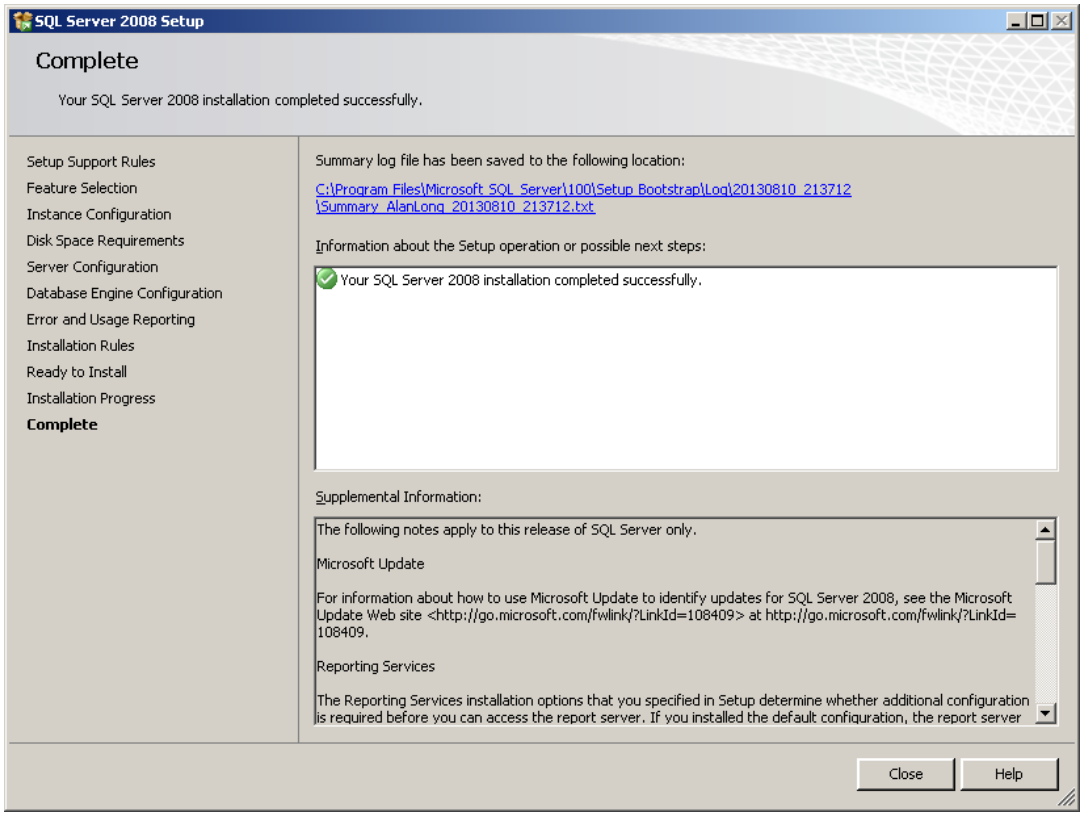

SQL Server 2008 Setup
Error and Usage Reporting
Help Microsoft improve SQL Server features and services.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Specify the information that you would like to automatically send to Microsoft to improve future releases of SQL Server. These settings are optional. Microsoft treats this information as confidential. Microsoft may provide updates though Microsoft Update to modify feature usage data. These updates might be downloaded and installed on your machine automatically, depending on your Automatic Update settings.
View the Microsoft policy for SQL Server privacy and data collection.
Read more about Microsoft Update and Automatic Update.
Send Windows and SQL Server Error Reports to Microsoft or your corporate report server. This setting only applies to services that run without user interaction.
Send feature usage data to Microsoft. Feature usage data includes information about your hardware configuration and how you use Microsoft software and services.
< Back
Next >
Cancel
Help


SQL Server 2008 Setup
Installation Rules
Setup is running rules to determine if the installation process will be blocked. For more information, click Help.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Operation completed. Passed: 7. Failed 0. Warning 0. Skipped 4.
Show details >>
Re-run
View detailed report
< Back
Next >
Cancel
Help

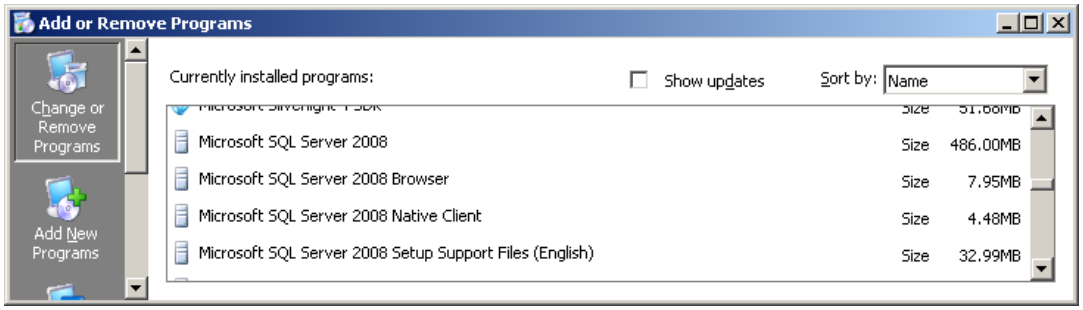

SQL Server 2008 Setup
Ready to Install
Verify the SQL Server 2008 features to be installed.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Ready to install SQL Server 2008:
Summary
Edition: Express
Action: Install
General Configuration
Features
Database Engine Services
Instance configuration
Instance Name: SQLEXPRESS
Instance ID: SQLExpress
Instance IDs
SQL Database Engine: MSSQL10.SQLEXPRESS
Instance Directory: C:\Program Files\Microsoft SQL Server\
Shared component root directory
Shared feature directory: C:\Program Files\Microsoft SQL Server\
Error and Usage Reporting
Usage Reporting: False
Error Reporting: False
Instance configuration
Database Engine
Service Configuration
Account: NT AUTHORITY\SYSTEM
Startup Type: Automatic
Configuration file path:
C:\Program Files\Microsoft SQL Server\100\Setup Bootstrap\Log\20130810_213712\ConfigurationFile.ini
< Back
Install
Cancel
Help


SQL Server 2008 Setup
Installation Progress
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Performing Windows Installer actions.
Install_SqlWriter_Cpu32_Action : ProcessComponents. Updating component registration
Next >
Cancel
Help




SQL Server 2008 Setup
Complete
Your SQL Server 2008 installation completed successfully.
Setup Support Rules
Feature Selection
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error and Usage Reporting
Installation Rules
Ready to Install
Installation Progress
Complete
Summary log file has been saved to the following location:
C:\Program Files\Microsoft SQL Server\100\Setup Bootstrap\Log\20130810_213712\Summary_AlanLong_20130810_213712.txt
Information about the Setup operation or possible next steps:
Your SQL Server 2008 installation completed successfully.
Supplemental Information:
The following notes apply to this release of SQL Server only.
Microsoft Update
For information about how to use Microsoft Update to identify updates for SQL Server 2008, see the Microsoft Update Web site <http://go.microsoft.com/fwlink/?LinkId=108409> at http://go.microsoft.com/fwlink/?LinkId=108409.
Reporting Services
The Reporting Services installation options that you specified in Setup determine whether additional configuration is required before you can access the report server. If you installed the default configuration, the report server
Close
Help

With control panel/Add or remove program, you can check the installation.

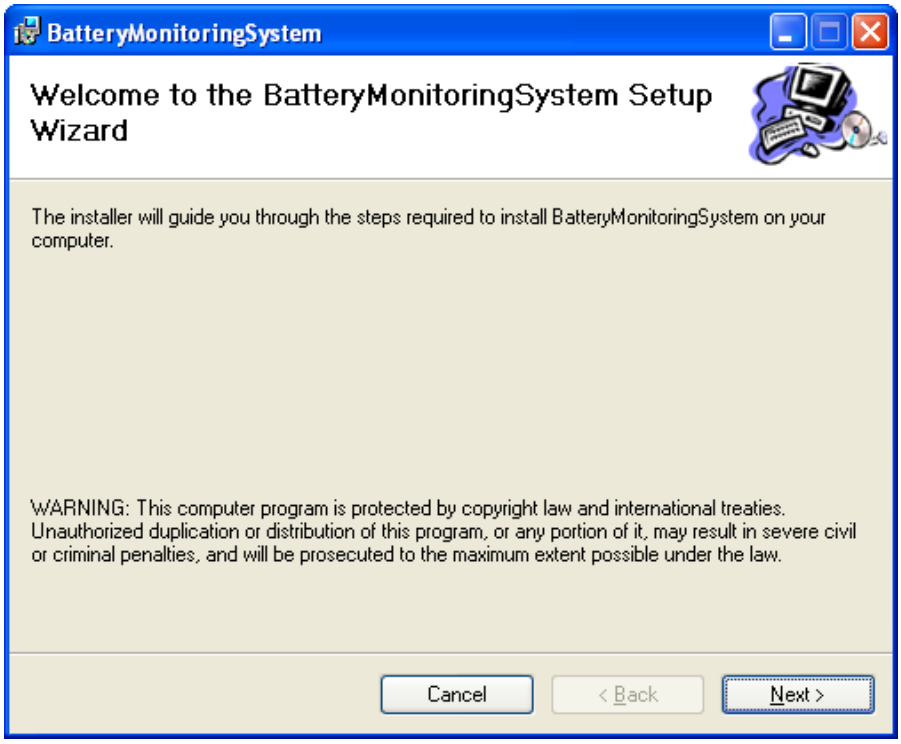


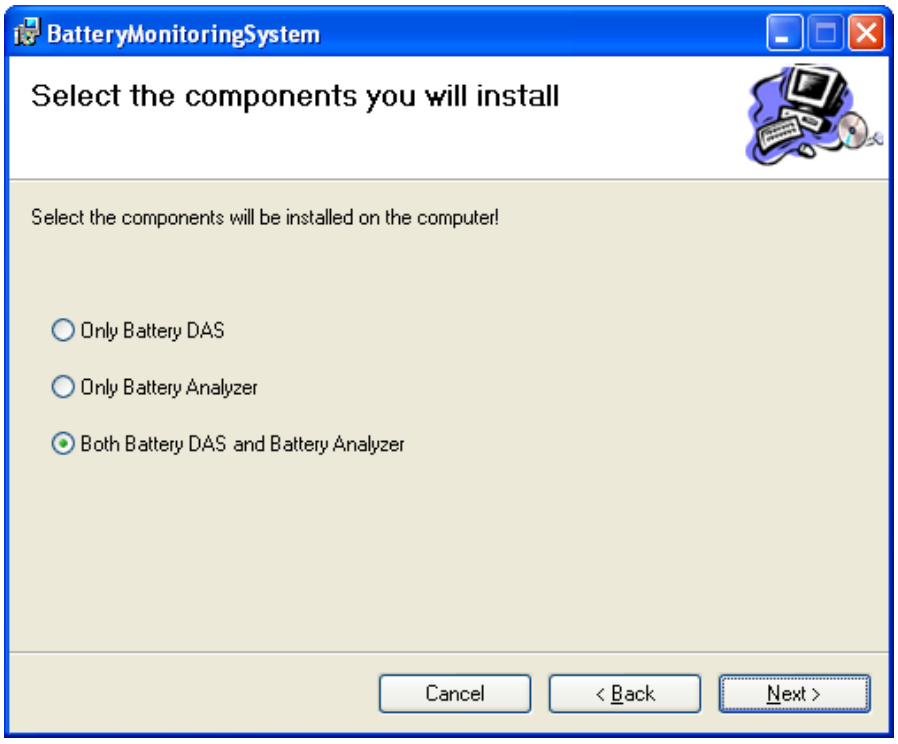
Now start BMS installation again. If in any case, you have installed incomplete BMS or early version, you need to uninstall it first.

Run Battery Analyzer, Operation → Update baseline, if no error, you have successfully installed SQL database.

3.1.4 Troubleshooting

3.2 BMS Software Installation


BatteryMonitoringSystem
Welcome to the BatteryMonitoringSystem Setup Wizard
The installer will guide you through the steps required to install BatteryMonitoringSystem on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >


BatteryMonitoringSystem
Select the components you will install
Select the components will be installed on the computer!
Only Battery DAS
Only Battery Analyzer
Both Battery DAS and Battery Analyzer
Cancel
< Back
Next >

Select both DAS and Battery Analyzer if your computer will link to monitoring devices.

3.3 Database Troubleshooting

If you encounter this error message, the database is not in place. You need to install the SQL Express as instructed in previous chapter.

In some case with Win 7 or 8 home edition, the SQLCMD.exe may not be registered for every user. You will need to copy
C:\BatteryDAQ\Battery Analyzer\CreateBMSDataBase.sql
To the folder where SQLCMD resides
C:\Program Files\Microsoft SQL Server\110\Tools\Binn\
Then run CreateBMSDataBase.sql manually as administrator to create database tables for Battery analyzer.

4 BMS Configuration

Battery Monitoring System Software includes 3 major components: Battery DAS, Battery Analyzer and Database.

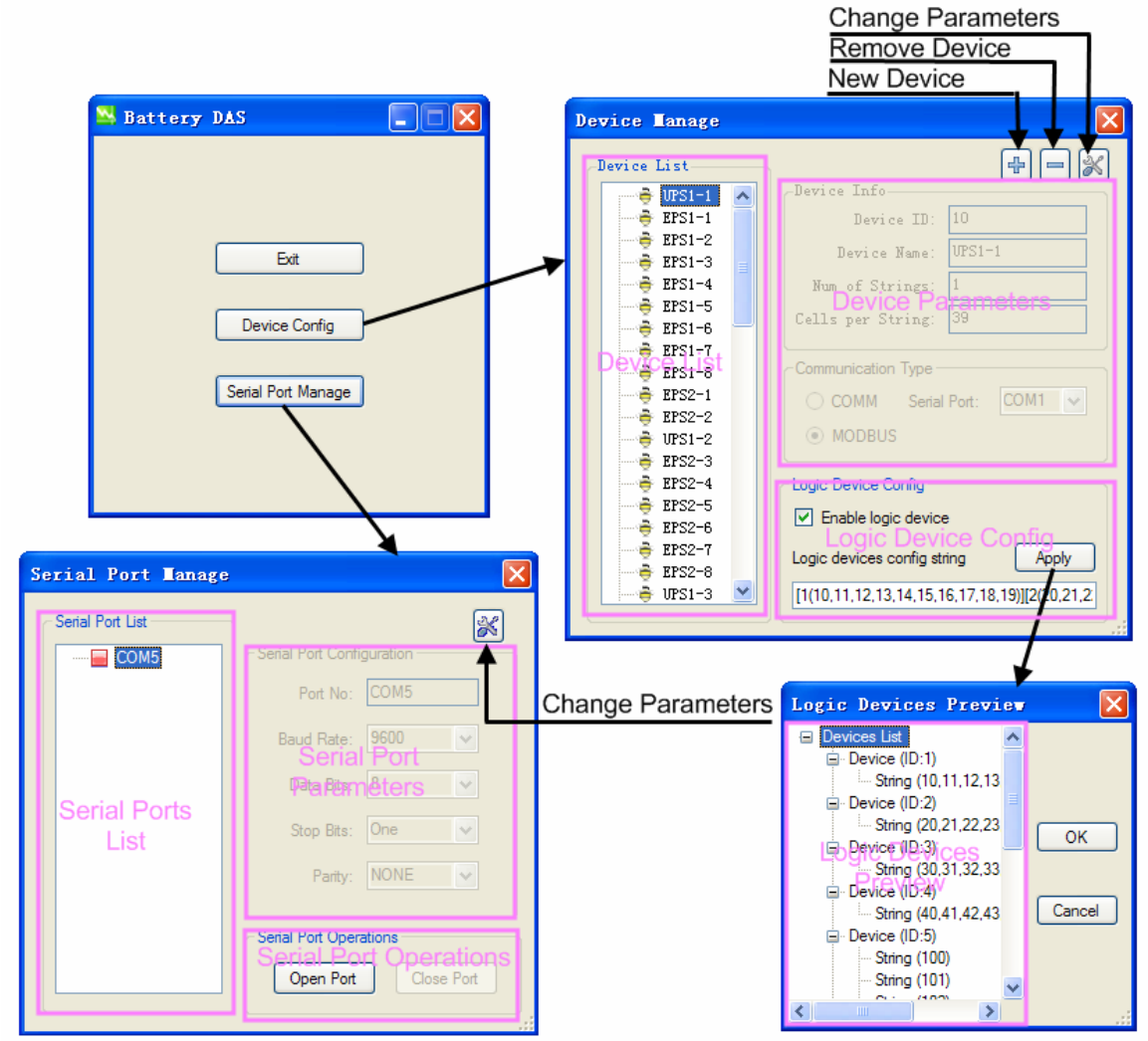
Battery DAS links to devices through serial port or TCP/IP Modbus devices. It reads the real-time data from monitoring devices and register data to database.

Battery Analyzer provides human operation interface to database. It does the analysis routine in the real-time mode. It receives real-time data from DAS software by Modbus TCP protocol.

Database stores data and alarm information. It stores analysis or alarm result from Battery Analyzer on the same PC or through networking.

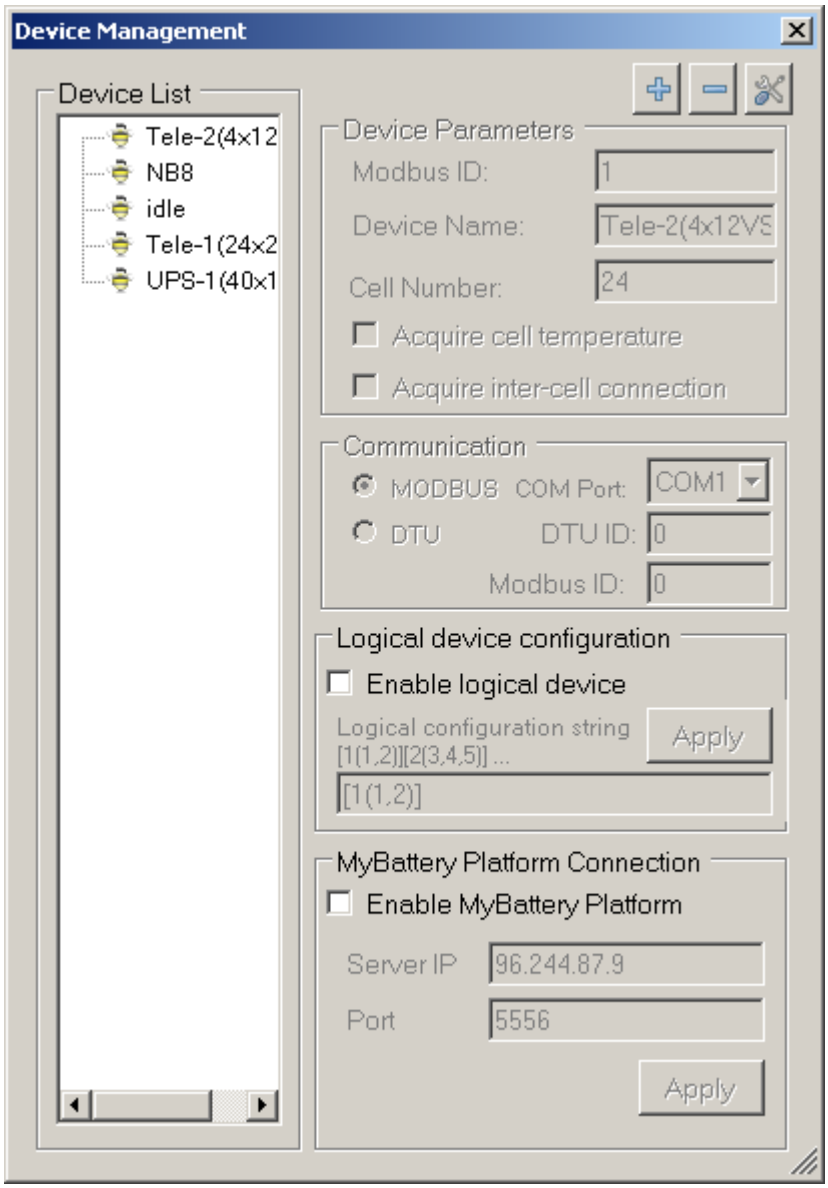
4.1 DAS Configuration

Battery DAS communicates to monitoring devices through serial port or TCP/IP devices. The standard Modbus protocol provides reliable data transmission. Non-standard COMM protocol is also available for some devices.



The above figure shows the main scheme of DAS software.

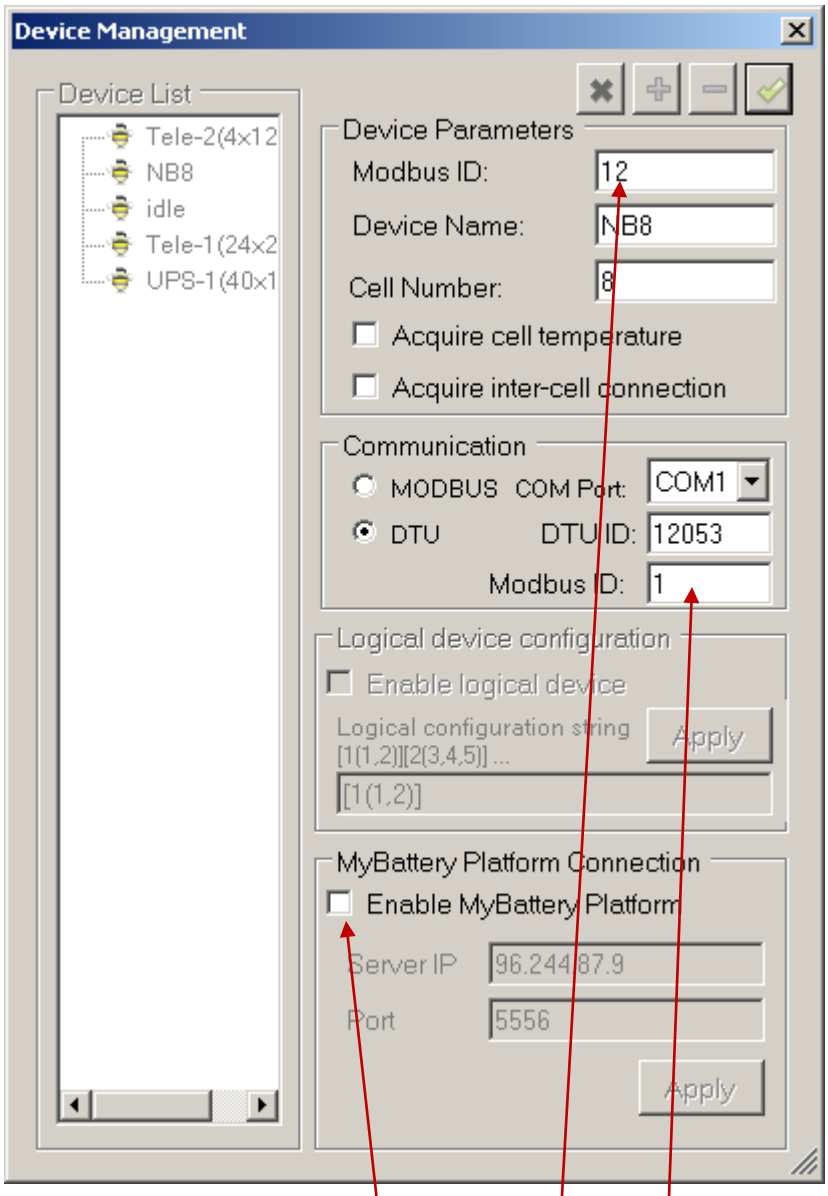
Battery DAS interfaces provide equipment configuration and communication port management.



The equipment configuration window allows user to add, delete devices or modify parameters. In some cases, the configuration of monitoring device may be different from physical devices. The Logic Device concept has been used in software. The data from Logic Device come from physical devices, but from one or more devices. Click “Apply”, the relationship between physical devices and Logic Devices will show up as in the figure.

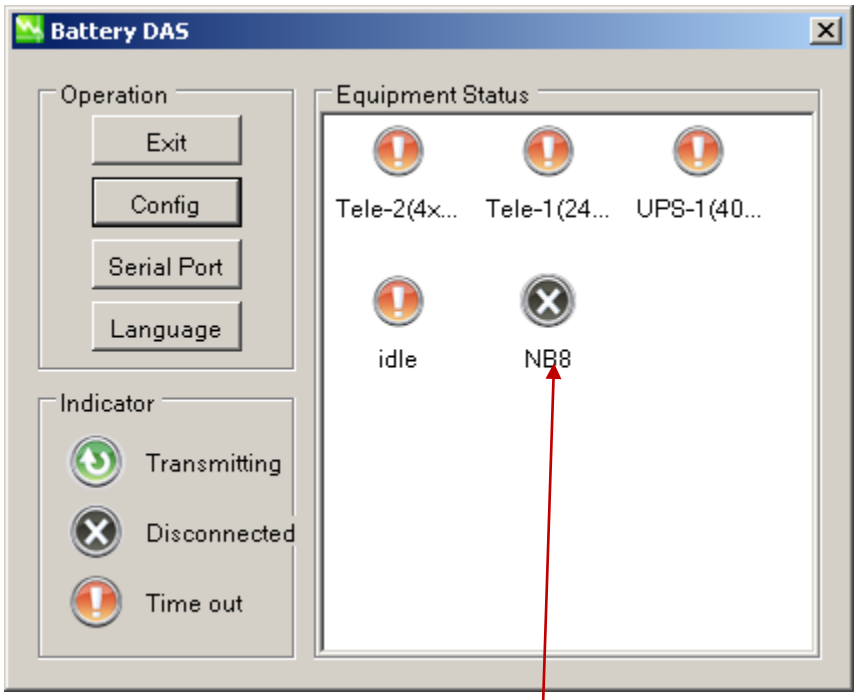
Serial port management window allows user to set the parameters for communication. They can be different for each device. Only the ports link to battery monitoring devices have been listed. (There are possibly more ports in the computer.) Each time, after restart DAS software, you have to open each port to initiate the communication.

For each device, you only need to do the configuration one time. The parameters will be saved for the later use until any change happens.



When receiving data from DTU, fill the DTU ID and the battery monitor Modbus ID. This monitor can be mapped to a **virtual Modbus** in DAS server.

Enable MyBattery Platform Connection only if you have subscripted the service.



With serial connection, DAS software pulls data from battery monitors. When there is no connection to that device or monitor is busy, the status icon will change from green to read (time out).

With DTU connection, DAS receives data from DTU, the interval is set at the DTU side. In this case, the status icon will stay at **gray** (disconnected).

Set **static IP** address to the computer running DAS server. Otherwise, other Battery Analyzer software or DTU cannot find DAS if IP address has been changed.

4.2 Analyzer Configuration

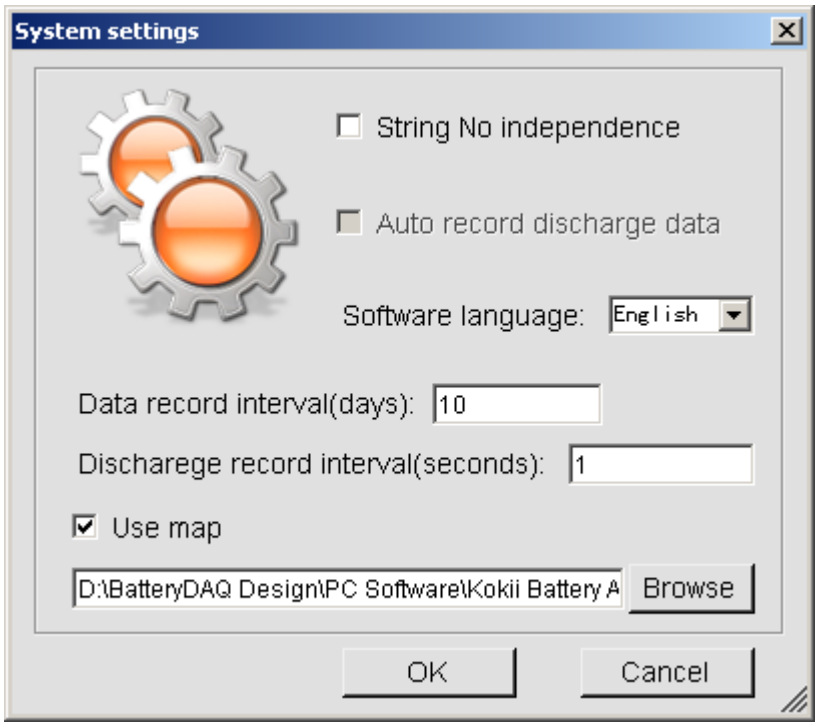
Battery Analyzer software receives the real-time data from DAS and performs display, analysis, store and historical data query.

Analyzer has 3 functional windows:

1) Map view. It shows registered sites on map. When any site has alarm, that site will change color and flashes.
2) Real-time data view
3) History data query

4.2.1 Map View

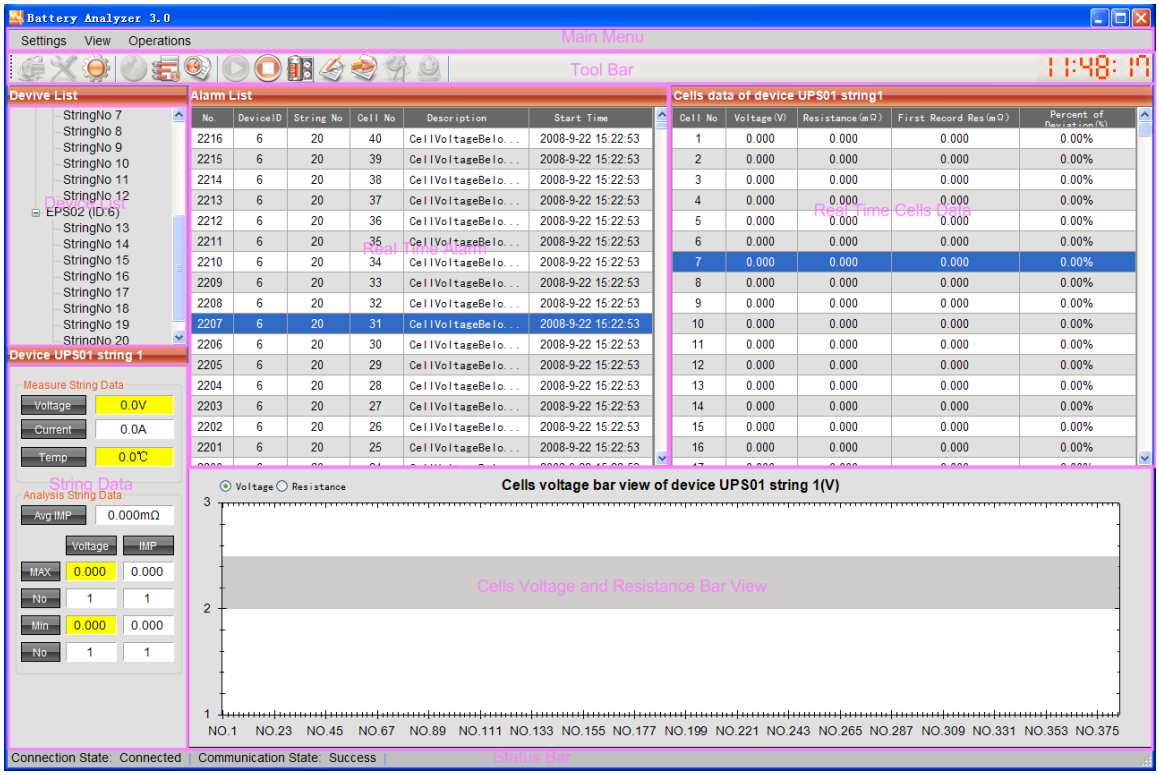
The map can be customized to reflect the real situation. Setting→System settings.



After load new map, you will need to locate the devices.
Operation → Map → Edit
Move the dots to correct locations.

*The current version does not support zoom in/out.

4.2.2 Real-time Data View

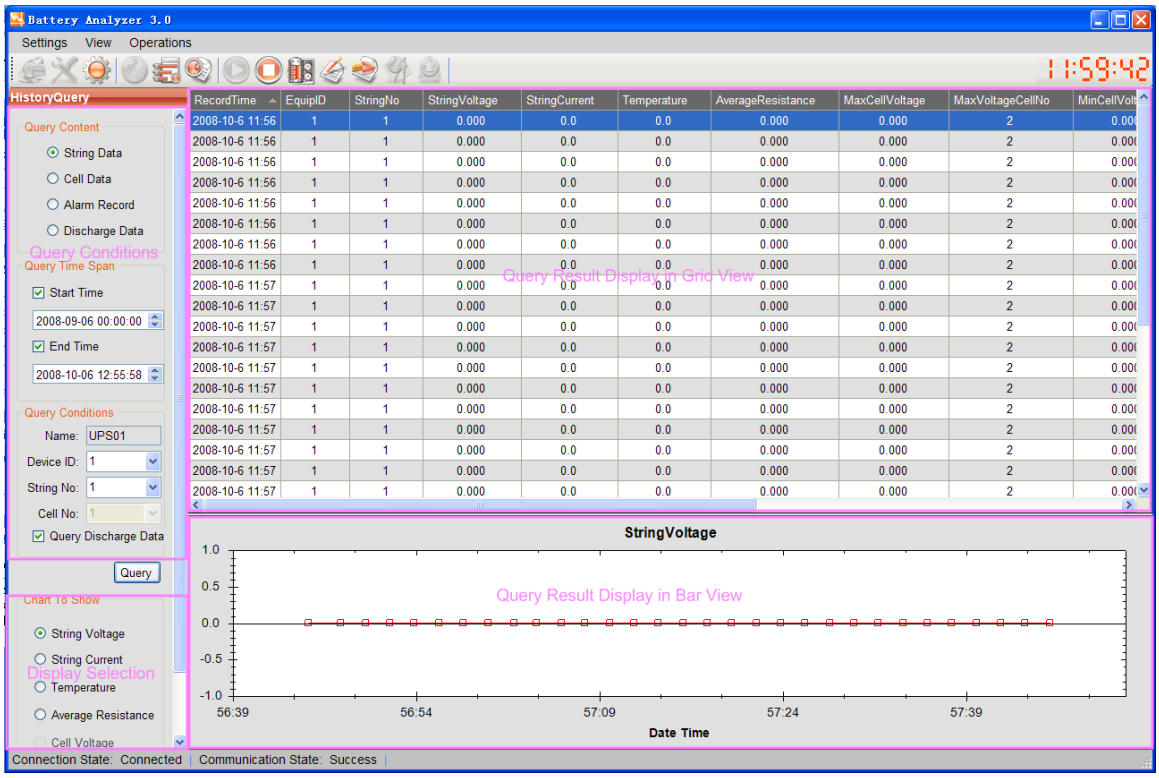


(Real-time data view)

The real-time data view also provides both table and chart. It generates alarm list and update the status.

4.2.3 History Data Query

The history data query provides the interface to search data in database.



The left/up zone of history data query window accepts input criteria for query.

- String Data
- Cell Data
- Alarm Data
- Discharge Data

By select the result, the data of voltage/current/temperature will show in table and chart. The internal resistance trend provides valuable information of battery condition.

4.2.4 Menu and Toolbar

Server settings: IP address and port. The server can be the same PC which runs the Analyzer or any other port which provides data through Modbus TCP. The default port is 502.

Device management: for device configuration corresponding to physical devices.

System setting： for system parameters, such as data recording interval and customized map.

Map view： switch to map view.

Real-time data view (main window)

History query: to perform query for history data and trends.

Run: to link to DAS software and database. After successful connection, the status will show at the low line and data will be refreshed timely.

Stop: disconnect to server, the query will be interrupted as well.

Discharge data: To start record of discharge data manually.

Add first record: After the new installation and capacity verification, the initial internal resistance will be recorded to database for future comparison.

Monthly report: To generate monthly report.

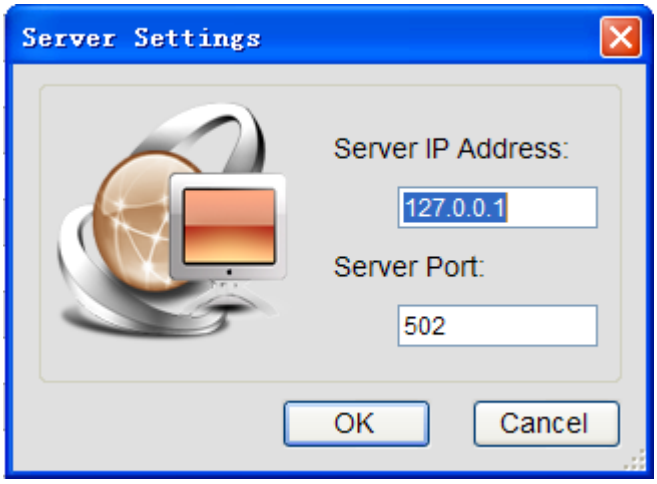
Map Edit: To locate the monitoring devices on map.

Save and exit edit: Exit map edit. You have to quit and restart Analyzer in order to update the map.

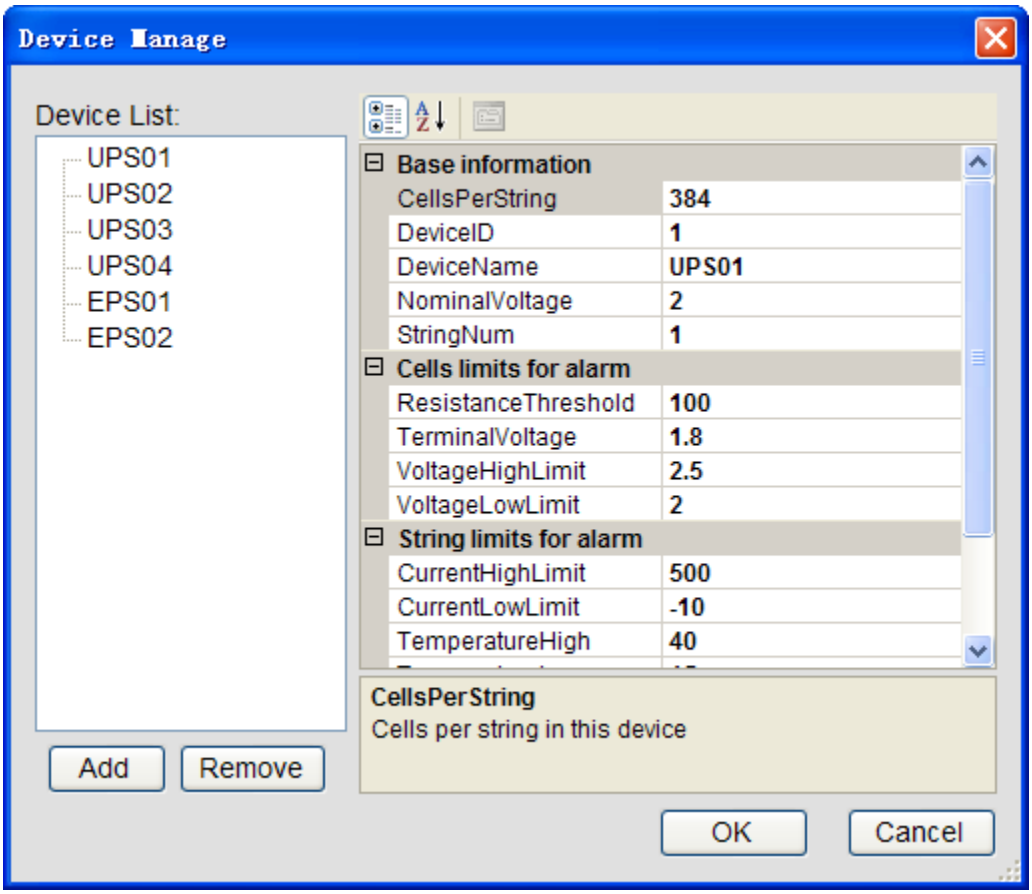
Help: To open help file.

4.2.5 Important Operations

Server setting the server is the computer which runs DAS software. If the DAS and Analyzer are installed in the same computer, the address will be 127.0.0.1，Default Port: 502.

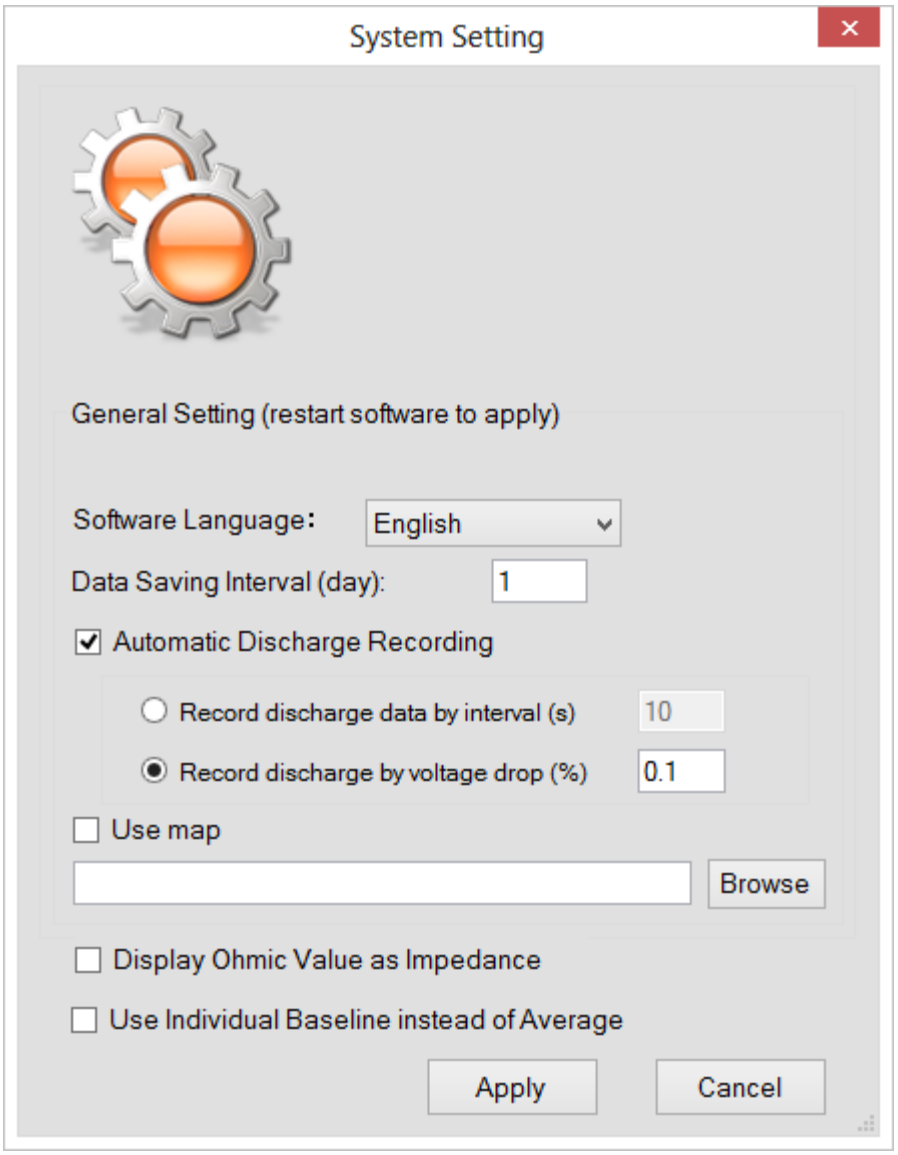


Device Configuration the device list provides “Add”, “Delete” and “Modify” function to device management.



* When the device list changes, all data and alarm information will be reset.

System setting it needs to set the basic parameters for system running.



The string number of each device will start from 1 when the string No independence has been selected. Otherwise, it will continue from last equipment.

Software Language: English and Chinese. Other language can be ordered.

Data record interval (days): The interval to write data to database for future history query.

Output alarm from serial port: if this option has been chosen, the alarm message will be generated continuously when there is any alarm. On the other hand, when there is no alarm, the message for “no alarm” will also be sending continuously.

Use Map: use real picture or facility drawings to locate the battery sites. The Google Map is under development for large scale application.

Click ‘OK” to save the changes.

Automatic Discharge Record

When the automatic discharge record is checked, the software will automatically start recording when the string voltage changes or the discharge current is detected.

Discharge record interval (Seconds): The interval to record discharge curve. Depends on the discharge rate, the shortest interval is 1 second.

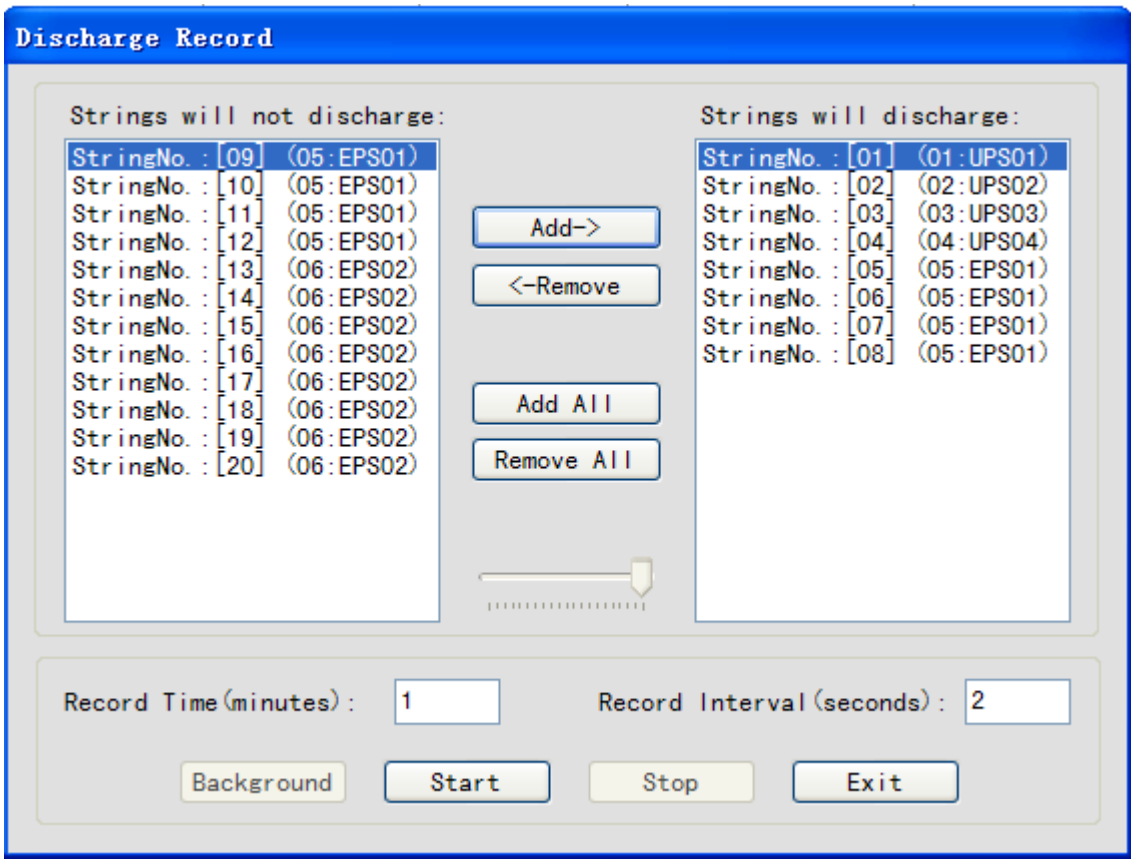
Manual Discharge Record This function provides a manual operation for discharge recording.

In this window, the left side list out the strings not for discharge. The right side lists all the strings which will discharge. Before any record takes effect, the correct string has to be selected. More than 1 string can be recorded simultaneously.

Record time needs to set to cover the intended discharge time. The interval also needs to set for reasonable resolution.

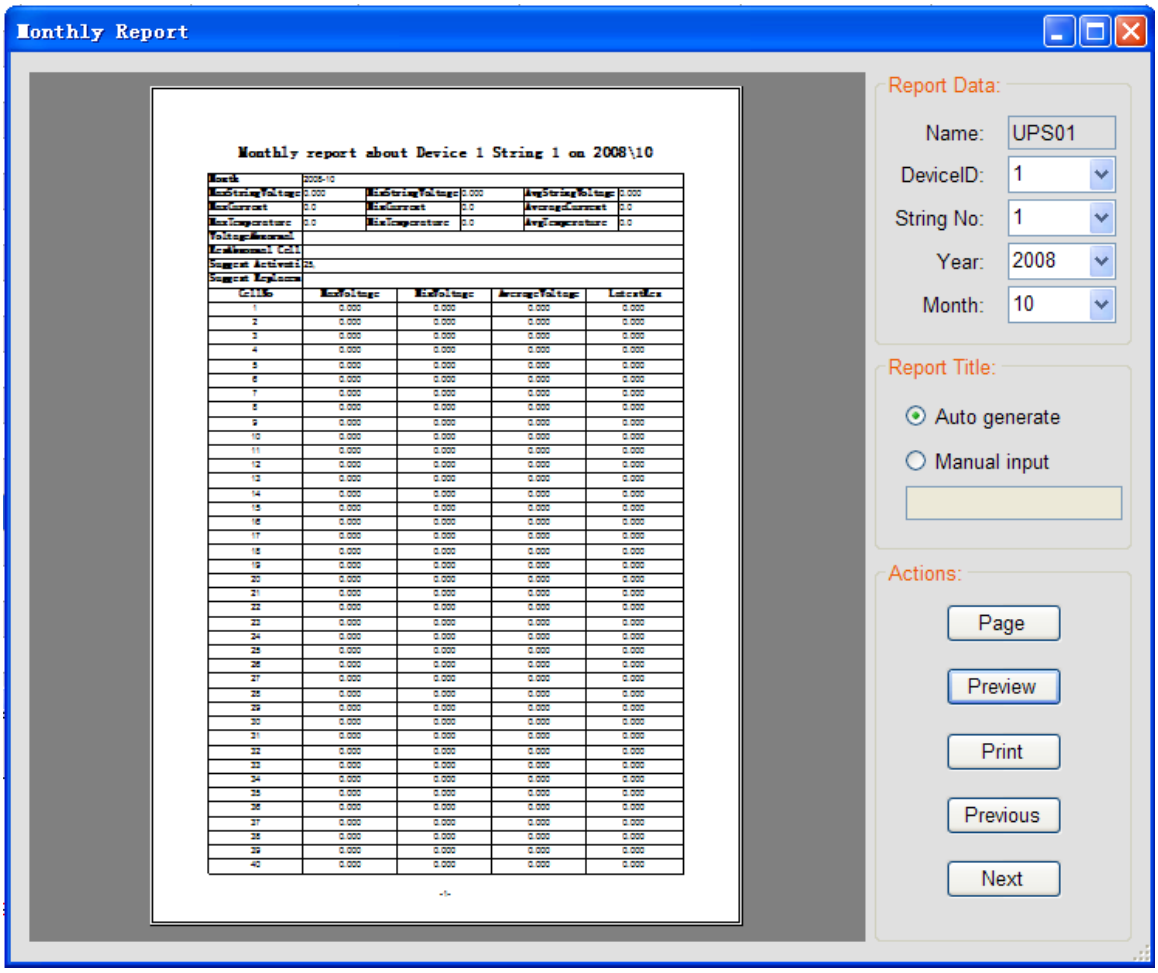
After setting, click "Start Record" to record data to database. The software does not control the discharge. Click "Background" will hide the window and you can do other operation with Analyzer. During the recording, you can stop it at any time.

The record can only work with the successful link between DAS and Analyzer.



Monthly Report Analyzer provides simple report function. The left panel

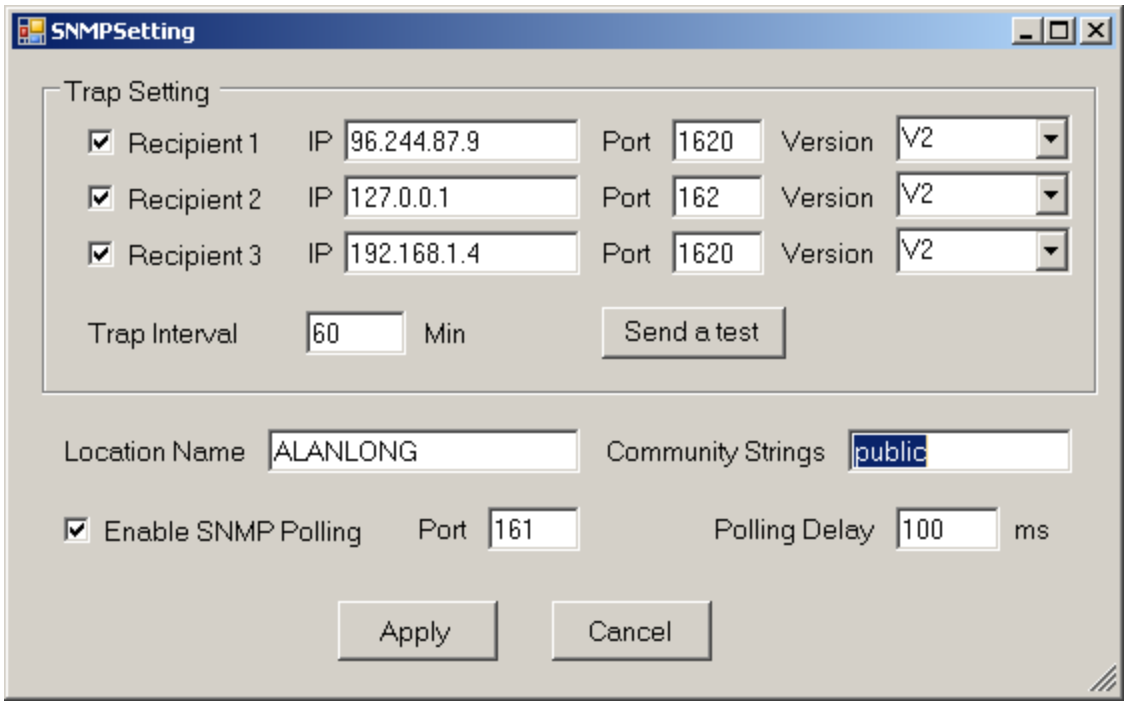
provides preview of the report. The right panel accepts the inputs to select data.



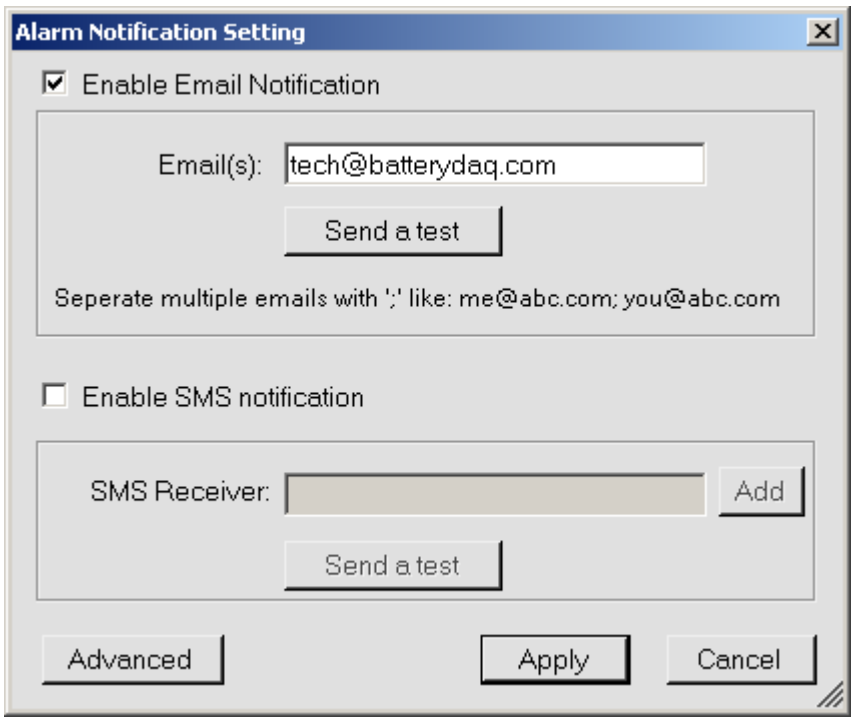
4.2.6 SNMP configuration

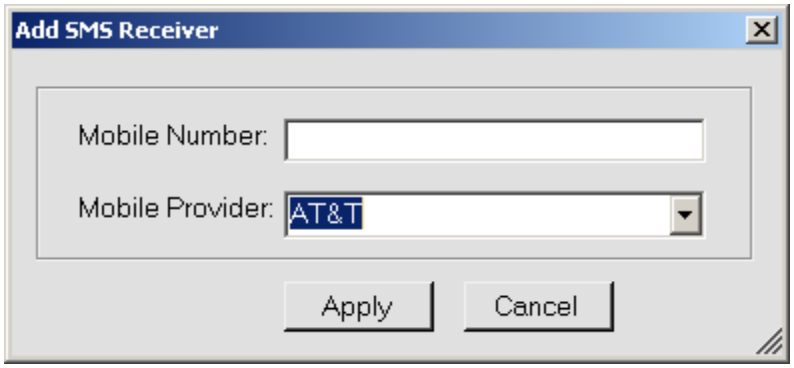
Software supports SNMP alarm and data pulling.

Contact us for MIB file.



4.2.7 Email and SMS alarm notification





4.3 Analyzer and DAS Auto-start

For most circumstances, it is important to set the software automatically start after power on to ensure 24/7 monitoring. You can choose to start this task with or without user login.

With login: windows will wait until you login to start the software.

Without login (recommended): windows will start the software after power on. Application is not visible when you use start without login. You can check with windows task manager/processes. Not easy to work around this "issue". You have to stop it and manually start. But this way will keep your software running after unexpected power outage.

Control Panel >> Performance and Maintenance >> Scheduled Task
Find or Browse to the application ("c:\batterydaq\Battery Analyzer.exe") you need to run.
Select: Perform this task (o When My Computer Starts)
Add the Admin or login credentials.
Go through each tab; make sure other options are correctly checked/unchecked.

Don't forget to add scheduled task for DAS.exe

4.4 Troubleshooting

If you couldn't change settings, run Battery Analyzer as Administrator.